SANYO

FILE NO

SERVICE MANUAL

LCD TV

LCD-DP55441

PRODUCT CODE No.: 1-130-273-04
CHASSIS NO. :
P55441-04

REFERENCE No.:SM0945017-00

CONTENTS

Attention: This service manual is only for service personnel to take reference with. Before servicing please read the following points carefully.

Safety precautions

1. Instructions

Be sure to switch off the power supply before replacing or welding any components or inserting/plugging in connection wire Anti static measures to be taken (throughout the entire production process!):

a) Do not touch here and there by hand at will;
b) Be sure to use anti static electric iron;
c) It's a must for the welder to wear anti static gloves.

Please refer to the detailed list before replacing components that have special safety requirements. Do not change the specs and type at will.

2. Points for attention in servicing of LCD

2.1 Screens are different from one model to another and therefore not interchangeable. Be sure to

Use the screen of the original model for replacement.

2.2 The operation voltage of LCD screen is high voltage. Be sure to take proper measures in protecting yourself and the machine when testing the system in the course of normal operation or right after the power is switched off. Please do not touch the circuit or the metal part of the module

That is in operation mode. Relevant operation is possible only one minute after the power is switched off.

2.3 Do not use any adapter that is not identical with the TV set. Otherwise it will cause fire or damage to the set.

2.4 Never operate the set or do any installation work in bad environment such as wet bathroom, laundry, kitchen, or nearby fire source, heating equipment and devices or exposure to sunlight etc. Otherwise bad effect will result.

2.5 If any foreign substance such as water, liquid, metal slices or other matters happens to fall into the module, be sure to cut the power off immediately and do not move anything on the module lest it should cause fire or electric shock due to contact with the high voltage or short circuit.

2.6 Should there be smoke, abnormal smell or sound from the module, please shut the power off at once. Likewise, if the screen is not working after the power is on or in the course of operation, the power must be cut off immediately and no more operation is allowed under the same condition.

2.7 Do not pull out or plug in the connection wire when the module is in operation or just after the power is off because in this case relatively high voltage still remains in the capacitor of the driving circuit. Please wait at least one minute before the pulling out or plugging in the connection wire.

2.8 When operating or installing LCD please don't subject the LCD components to bending, twisting or extrusion, collision lest mishap should result.

2.9 As most of the circuitry in LCD TV set is composed of CMOS integrated circuits, it's necessary to pay attention to anti statics. Before servicing LCD TV make sure to take anti static measure and ensure full grounding for all the parts that have to be grounded.

2.10 There are lots of connection wires between parts behind the LCD screen. When servicing or moving the set please take care not to touch or scratch them. Once they are damaged the screen would be unable to work and no way to get it repaired.

If the connection wires, connections or components fixed by the thermo tropic glue need to disengage when service, please soak the thermo tropic glue into the alcohol and then pull them out in case of damage.

2.11 Special care must be taken in transporting or handling it. Exquisite shock vibration may lead to breakage of screen glass or damage to driving circuit. Therefore it must be packed in a strong case before the transportation or handling.

2.12 For the storage make sure to put it in a place where the environment can be controlled so as to prevent the temperature and humidity from exceeding the limits as specified in the manual. For prolonged storage, it is necessary to house it in an anti-moisture bag and put them altogether in one place. The ambient conditions are tabulated as follows:

Temperature	Scope for operation	0 ~+ 50 ^{o}C
	Scope for storage	-20 ~+ 60^{o}C
Humidity	Scope for operation	20% ~ 90 %
	Scope for storage	10% ~ 90%

2.13 Display of a fixed picture for a long time may result in appearance of picture residue on the screen, as commonly called “ghost shadow”. The extent of the residual picture varies with the maker of LCD screen. This phenomenon doesn’t represent failure. This “ghost shadow” may remain in the picture for a period of time (several minutes). But when operating it please avoid displaying still picture in high brightness for a long time.

3. Points for attention during installation

3.1 The front panel of LCD screen is of glass. When installing it please make sure to put it in place.
3.2 For service or installation it’s necessary to use specified screw lest it should damage the screen.
3.3 Be sure to take anti dust measures. Any foreign substance that happens to fall down between the screen and the glass will affect the receiving and viewing effect
3.4 When dismantling or mounting the protective partition plate that is used for anti vibration and insulation please take care to keep it in intactness so as to avoid hidden trouble.
3.5 Be sure to protect the cabinet from damage or scratch during service, dismantling or mounting.

2. Alignment instructions

(1) Test equipment

VG-859 (YPbPr, VGA, HDMI signal generator)
FLUKE 54200(TV signal generator)
CA210 (white balancer)

(2) Power test

Connect main board, power board and IR board according the wiring diagram, connect the power and press power key (Remote controller or Keypad) button to turn on the TV.

a) Test the pin voltage of P802/power board , the data is shown in table1:

Table1 voltage data of P802

For 55”										
P802	Pin1,2	Pin3,4	Pin5,6,7	Pin8,9	Pin10	Pin11,12	Pin13	Pin14	Pin15	Pin16
Voltage	GND	22.8-25.2V	GND	11.6-12.8V	NA	4.75-5.25V	On:2V-5.5V Off: 0-0.5V	<0.6V	2.5-5V PWM	2-5V

b) Test the pin voltage of P803/P804/power board, the data is shown in table2:

Table2 voltage data of P803/P804

For 55”						
P803	Pin1,2,3,4,5	Pin6,7,8,9,10	Pin11	Pin12	Pin13	Pin14
Voltage	22.8-25.2V	GND	NC	2V-5V	2.5-5V PWM	NC

(3) Alignment flow-chart

The alignment flow-chart is shown as fig-1

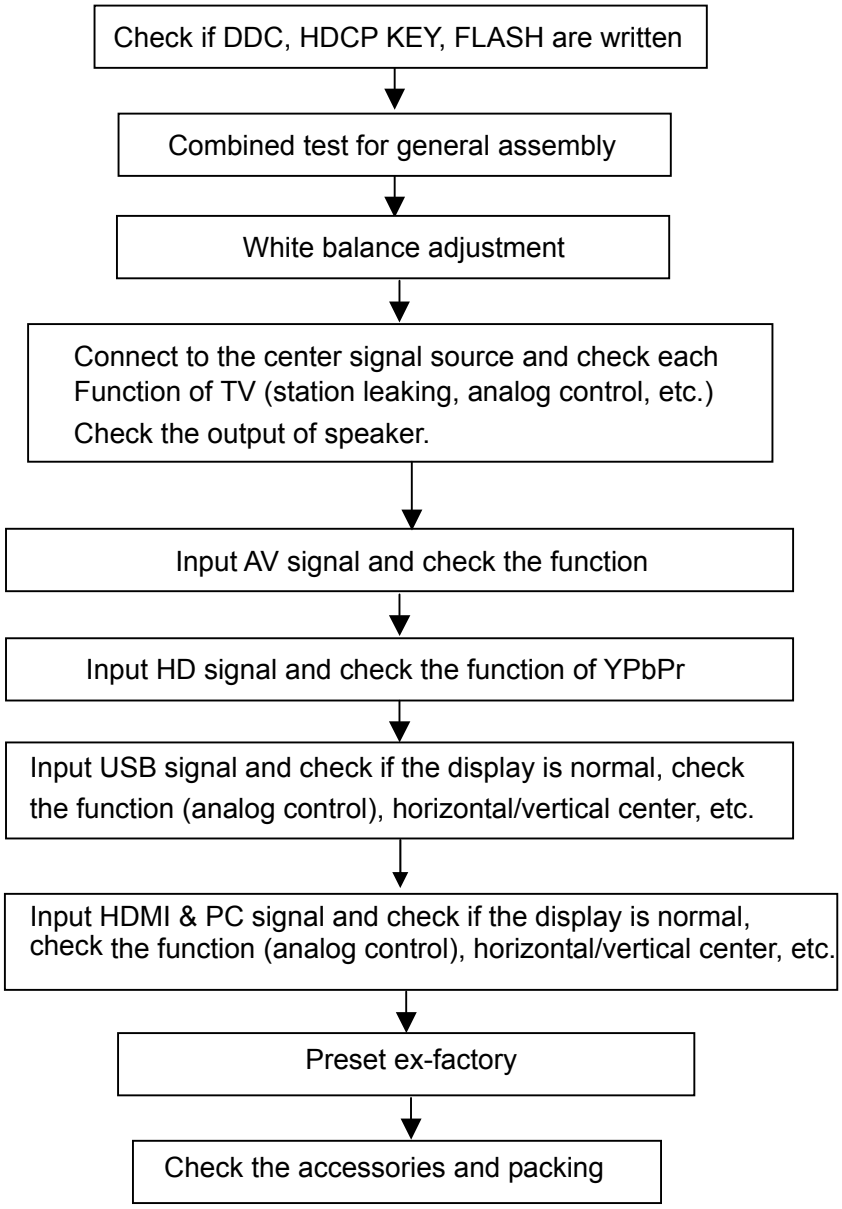


Fig-1 adjustment flow-chart

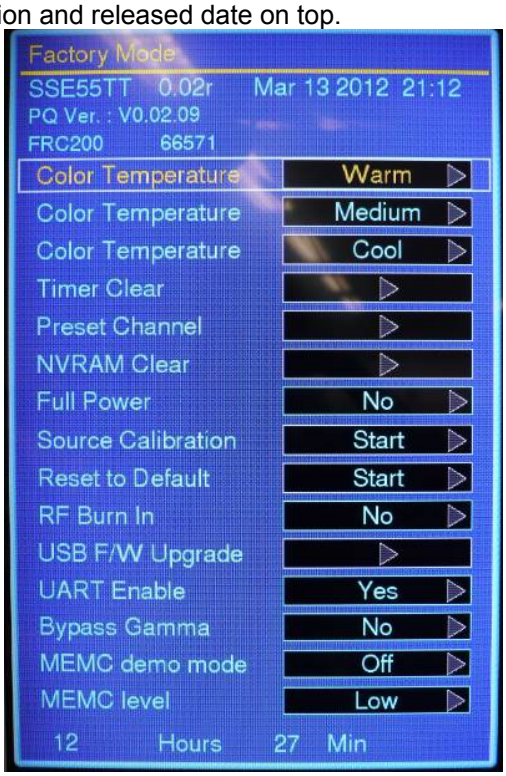
(4) Adjustment instruction

At any input source then press the “←”, “EXIT” and “OK” (Remote control) to enter factory mode

During Factory menu, if “MENU” key is pushed, system will exit factory mode.

(5) Items of Factory menu

When in any inputs then press the “Left -> Exit -> OK” key of remote control to enter factory mode..
During Factory menu, if “MENU” or “EXIT” key is pushed, system will exit factory mode.
Press up and down key can move high light item from Color Temperature -> Timer Clear -> Preset Channel->NVRAM Clear-> Full Power -> Source Calibration -> Reset to Default -> RF Burn In -> USB F/W Upgrade -> UART Enable-> Bypass Gamma-> MEMC demo mode-> MEMC level.
The Timer Clear, NVRAM Clear and Reset to Default items will have a check dialog “yes or no” to do or not.
Push “Enter” key can select high light item function. (Press left and right can adjust value)
Display panel Burn in Time on the bottom.
Display model name, firmware version and released date on top.



1) Factory Color Temp data edit
   This is used for Factory adjusts color temperature. Don't change this value.
2) Timer Clear
   Reset the timer which records hours of LCD panel burn in (Don't clear timer after FW update.)
   This item will have a check dialog “yes or no” to do or not.
   - Time in factory mode: Time function shall be displayed automatically. Saving the total time of system power on (LCD turn on), and count the time automatically. The timer is continuous and saved (per 60 minutes) forever, unless it will be reset by doing “Timer Clear”.
3) Preset channel
   Load preset channel for production line. (Refer 4.4.4 Preset channel table).
4) NVRAM CLEAR
   Initialize program’s default values to NVRAM for following adjustment items accuracy.
   In factory mode it is the first and important step to make sure all values are default value and correct
   - Reset settings: Gamma table, Channel table (Favorite channel, Channel label etc.), Model table (H/V Position, Clock, Phase), Source dependent setting (Contrast, Brightness etc.), Common setting (Volume, Language etc.), Parental Control (Rating, Password etc), Closed Caption.
   To avoid a mistake initial process after factory setting is done. This item will have a check dialog “yes or no” to do the initial or not.

Notice:

After this item is processed then the DUT needs to be powered off then AC powered off.

5) Full power (For factory test only)

This is for power consumption testing.

To measure the maximum power consumption of TV set, we adjust the value of following items to maximum.

- Video: Contrast maximum value, Brightness maximum value, Backlight maximum value.
- Audio: Volume maximum value, Bass default value, Treble default value.

Press enter key to turn on Full Power and OSD stay display until press enter key to recover from Full Power

6) Source Calibration (For factory used only, don't do it without correct machine).

Source Calibration (gain/offset) must be adjusted color by firmware automatic adjustment in PC, and Component input source.

This item will have a result dialog “OK” or “NG”.

7) Reset to Default

Reset all settings of OSD menu to default value.

- Reset settings: Channel table, Model table (H/V Position, Clock, Phase), Source dependent setting (Contrast, Brightness etc.), Common setting (Volume, Language etc.), Parental Control (Rating, Password etc), Closed Caption.
- Please execute Reset to Default once after FW is upgraded.

8) RF Burn In (For factory test only)

Use “snow” pattern for burn in. Selected items are “On” and “Off”.

While turn on burn in mode, firmware will automatically turn off “Auto power off” function.

If there is no power supply suddenly, firmware will re-enter burn in mode automatically when power supply is back

Pressed the “Power” key, firmware will automatically turn off burn in mode.

Burn in mode: Source is “ANT/Cable" and channel is NTSC channel 3.

9) USB F/W Upgrade

- We don't recommend upgrade FW here. We recommend upgrade FW in normal power on status (not in factory menu), just plug in USB with correct FW file name. (Refer to item 7)

Upgrade firmware through USB.

10) UART Enable (For factory test only)

Enable to communicate with Auto-Alignment system.

11) Bypass Gamma

For factory test value of gamma.

12) MEMC demo mode

For factory test MEMC.

13) MEMC level

For factory test MEMC.

(6) Performance check

6-1 TV function

Connect RF to the center signal source, enter Channel menu → auto tuning, check if there are channels be skipped, check if the picture and speaker are normal.

6-2 AV terminals

Input Video signal, check if the picture and sound are normal.

6-3 YPbPr terminal

Input YUV signal (VG859 signal generator), separately input the YUV signals listed in table4 and check if the display and sound are normal at any situation (power on, channel switch and format convert, etc.)

Table4 YUV signal format

MODE	FREQ	PERIOD	SYNC POLARITY	PIXEL CLOCK	Display	SYNC WIDTH	BACK PORCH
	LINE(kHz) FRAME	LINE (pixel) FIELD	LINE FIELD	(MHz)	LINE (pixel) FRAME	LINE (pixel) FRAME	LINE (pixel) FRAME

	(Hz)	(lines)			(lines)	(lines)	(lines)
	15.734	1716	Negitive	27	1440	124	114
59.94Hz 720x480i	59.94	525	Negitive		480	3	15
	31,469	858	Negitive	27	720	62	60
59.94Hz 720x480P	59.94	525	Negitive		480	6	30
	45	1650	Positive	74.25	1280	40	220
60Hz 1280x720P	60	750	Positive		720	5	20
	33.75	2200	Positive	74.25	1920	44	148
60Hz 1920X1080i	60	1125	Positive		1080	5	15
	67.5	2200	Positive	148.5	1920	44	148
60Hz 1920X1080P	60	1125	Positive		1080	5	36

6-4 VGA terminal

Input VGA signal (VG848 signal generator), separately input the signals listed in table5 and check the display and sound. If the image is deflection of the Horizontal and vertical, select Menu->Setup->Auto Adjust to perform auto-correct.

Table5 VGA signal format

Mode	FREQ	PERIOD	SYNC POLARITY	PIXEL CLOCK	Display	SYNC WIDTH	BACK PORCH
	LINE(kHz) FRAME(Hz)	LINE (pixel) FIELD(lines)	LINE FIELD	(MHz)	LINE (pixel) FRAME(lines)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)
VGA 60Hz	31.469	800	Negative	25.175	640	96	40
640x480	59.941	525	Negative		480	2	25
SVGA 60Hz	37.879	1056	Positive	40	800	128	88
800x600	60.317	628	Positive		600	4	23
XGA 60Hz	48.363	1344	Negative	65	1024	136	160
1024x768	60.004	806	Negative		768	6	29
WXGA 60Hz	47.776	1664	Negative	79.5	1280	128	192
1280x768	59.87	798	Positive		768	7	20
WXGA 60Hz	47.712	1792	Positive	85.5	1360	112	256
1360x768	60.015	795	Positive		768	6	18
SXGA 60Hz	63.981	1688	Positive	108	1280	112	248
1280x1024	60.02	1066	Positive		1024	3	38

6-5 HDMI terminal

Input HDMI signal (VG859 signal generator), separately input the signals listed in table6 and check the display and sound (32 KHz, 44.1 KHz, 48 KHz) at any situation (power on, channel switch and format convert, etc.)

Table6 HDMI signal format

FREQ	FREQ	PERIOD	SYNC POLARITY	PIXEL CLOCK	Display	SYNC WIDTH	BACK PORCH
MODE	LINE(kHz)	LINE (pixel)	LINE	(MHz)	LINE (pixel)	LINE (pixel)	LINE (pixel)

	FRAME(Hz)	FIELD(lines)	FIELD		FRAME (lines)	FRAME (lines)	FRAME (lines)
VGA 60Hz	31.469	800	Negitive	25.175	640	96	40
640x480	59.94	525	Negitive		480	2	25
SVGA 60Hz	37.879	1056	Positive	40	800	128	88
800x600	60.317	628	Positive		600	4	23
XGA 60Hz	48.363	1344	Negitive	65	1024	136	160
1024x768	60.004	806	Negitive		768	6	29
SXGA 60Hz	63.981	1688	Positive	108	1280	112	248
1280x1024	60.02	1066	Positive		1024	3	38
WXGA 60Hz	47.776	1664	Negitive	79.5	1280	128	192
1280x768	59.87	798	Positive		768	7	20
WXGA 60Hz	47.712	1792	Positive	85.5	1360	112	256
1360x768	60.015	795	Positive		768	6	18
59.94Hz 720x480i	15.734	1716	Negitive	27	1440	124	114
	59.94	525	Negitive		480	3	15
59.94Hz 720x480P	31.469	858	Negitive	27	720	62	60
	59.94	525	Negitive		480	6	30
60Hz 1280x720P	45	1650	Positive	74.25	1280	40	220
	60	750	Positive		720	5	20
60Hz 1920X1080i	33.75	2200	Positive	74.25	1920	44	148
	60	1125	Positive		1080	5	15
60Hz 1920X1080P	67.5	2200	Positive	148.5	1920	44	148
	60	1125	Positive		1080	5	36
24Hz 1920x1080P	27	2750	Positive	74.25	1920	44	148
	24	1125	Positive		1080	5	36

6-6 other functions check

a) Check the turn on/turn off timer, sleep timer, picture/sound mode, OSD, stereo and analog TV Teletext, etc.

(7) USB Software updated

(1) Insert the USB with the firmware which the file name is matched with the model name in factory mode.
(2) If system detect the same firmware file name, USB upgrade message would appear automatically.
(3) Press Left key to select Yes, and then press OK key to start the upgrading.
(4) Upgrading is starting, please wait for the progress finish.
(5) When the progress completed, please follow the instruction to remove USB and restart by AC off then on.

3. Working principle analysis of the unit

1. NTSC signals flow:
Antenna signal will be send to tuner ENV56U05D8F, then Tuner will be demodulating and output standard video signal TV-CVBS, and sound SIF signal.
TV-CVBS will send to the master control IC ZR39748 to video decode, de-interlace and scaler, then output LVDS level drive for panel display.
The sound IF (SIF) will be fed into ZR39748, after demodulating, pre-amplifying, bass adjusting and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

2. Composite/Component signal flow
Composite signal and Component signal will be fed to ZR39748 to perform video decode, de-interlace and scaler, then output LVDS drive level for panel display.
Audio signal from Composite/Component terminal via matched resistance is fed to ZR39748 to bass adjust and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

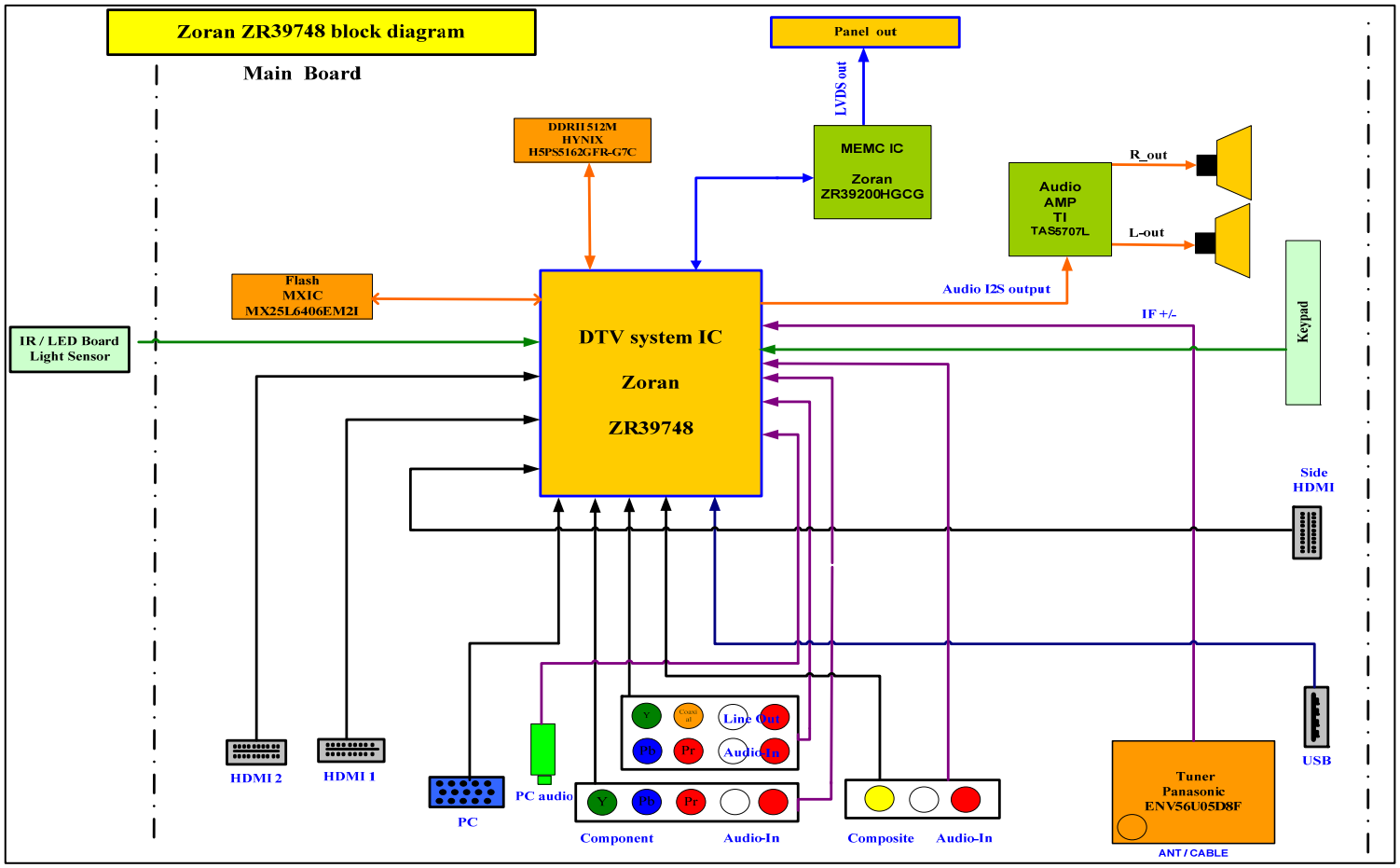
3. PC signal flow
PC signal via terminal socket sent to ZR39748 A/D, PC output R/G/B of 24 bit to back end module to Video decode, de-interlace and image scale, then send to LVDS level drive for panel display.
Sound signal of PC terminal via matched resistance and sent to ZR39748 to bass adjust and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

4. HDMI signal flow
Two HDMI video signals are directly fed to the master control IC ZR39748 to digital decode, image scale, then output LVDS drive level for panel display. HDMI audio signal via decoder built-in ZR39748 to bass adjust and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

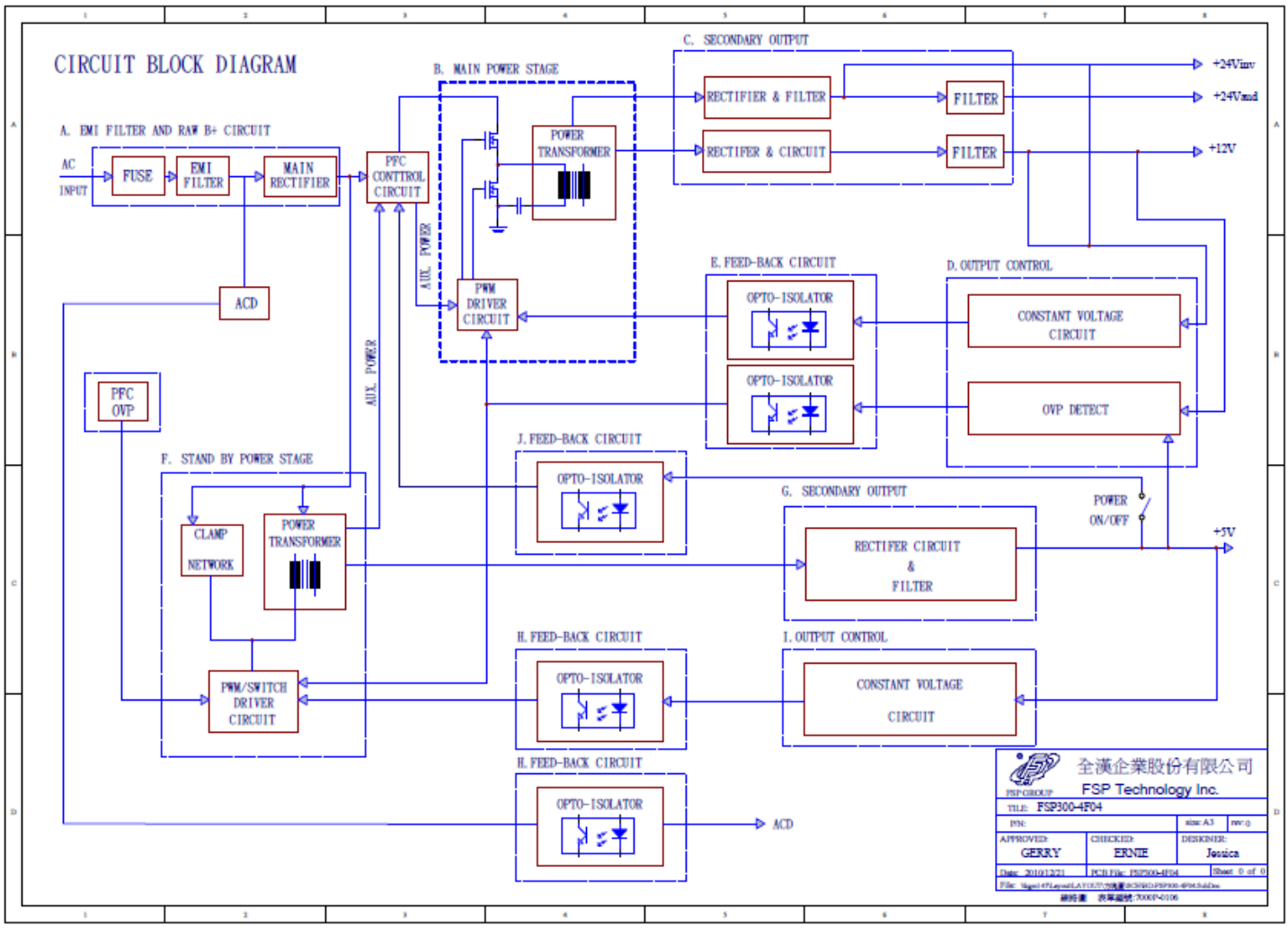
5. USB signal flow
USB signal via USB connector sent to ZR39748 and its A/D conversion to YPbPr output for ZR39748, then output R/G/B of 24 bit to back end module to Video decode, de-interlace and image scale, then send to LVDS level drive for panel display.
Sound signal of USB signal via matched resistance and sent to ZR39748 to bass adjust and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

4. SSE55T 55” Block Diagram

4-1 Block Diagram



4-2. Power/B block diagram.



IC block diagram

1. Zoran ZR748

• **Integrated Digital & Analog Demodulator**

• 8VSB/QAM-B

• NTSC/BTSC/A2K

• **Video Inputs**

• Three (3) 1080p HDMI (v1.4a/DC)*

• One (1) 1080p YPbPr

• One (1) VGA, up to WUXGA resolution

• Two (2) CVBS*, One (1) S-Video

• **Audio Inputs**

• Five (5) stereo L/R line-level*

• **Internal Video/Audio Processing**

• NTSC video decoder

• MPEG-2 decoder

• 10-bit video processing

• 1080i motion-adaptive de-interlacer

• ACM-2D color processor

• Graphics blending/overlay

• Audio DSP

• **Video Outputs**

• Dual-channel LVDS (1080p, up to 10bpp)

• miniLVDS & RSDS (6/8bpp, up to 330MHz)

• LCD panel timing control signals (TCON)

• **Audio Outputs**

• One (1) stereo L/R DDX differential

• One (1) stereo L/R single-ended DDX

• Optional up-to-four (4) more single-ended DDX

• Optional up-to-three (3) I2S stereo pairs

• One (1) S/PDIF

• **System Processors & Interfaces**

• 300MHz system CPU

• TV microcontroller for standby mode

• One (1) USB 2.0

• **External SPI Flash Memory: 2-16MByte**

• 2-4MB typical for ATSC DTV application

• **External 16-bit DDR2 Required**

• DDR2-800 for most design configurations

• DDR2-1066 for 1080p with overdrive designs

• 64MByte typical for most designs

• **Power**

• 1.1V core voltage, 1.8V memory I/F, 3.3V I/O

• **Two Package Options**

• 365-ball BGA, 23x23mm2

• 256-pin LQFP with e-pad, 28x28mm2

(*) Slight variation of support with QFP package

1.1. SupraHD® 748 IC Description

The SupraHD® 748 is a member of the SupraHD® family of DTV system-on-chip (SoC) developed by Zoran. This device is intended to be used in ATSC high-definition digital television implementations. This device includes all of the functionality required to support the television implementations shown in the following block diagrams.

Figure 2 shows a typical ATSC system implementation using the SupraHD® 748.

Figure 3 shows the detailed block diagram of the SupraHD® 748.

Figure 4 shows the video and audio input/output options of the SupraHD® 748.

1.2. SupraHD® 748 Features

The following sub-sections list the features of the SupraHD® 748 per category. Note that features unique to the BGA package are indicated with a “(BGA package)” designation while QFP package features are indicated with “(QFP package)”.

1.2.1. Embedded Processing Unit

• **High performance CPU**

  • Integrated high-performance MIPS® 4KEc™ CPU operating at 300MHz

  • 32-bit MIPS32 enhanced architecture

  • 8 K instruction cache, 8 K data cache, (2-way set associative)

  • Programmable memory management unit

  • Multiply/Divide unit

• **Power-down mode (triggered by WAIT instruction)**

• **EJTAG debug support**

• **Fully production-tested software suite**

  • ATSC/NTSC DTV application with customizable OSD

  • V-Chip for analog and digital channels

  • PSIP parsing for channel map and EPG

  • Analog and digital closed-captioning (EIA-608 and EIA-708)

- Royalty-free Zoran True Fonts for OSD and closed-captioning
- Transport, video decode (single MP@HL), audio decode (AC-3, MPEG Layer I & II), graphics, and display drivers
- Drivers for tuner, HDMI and analog inputs
- ThreadX royalty-free RTOS

1.2.2. Video Processing

- **Image processing**
  - Up to 10-bit processing
  - De-interlacing
    - 1080i capable, per-pixel motion adaptive, multiple cadence detection, 8º low-angle interpolation
  - Black bar detection
    - Horizontal and vertical
- **Image quality enhancements**
  - Noise reduction (up to 1080p)
    - Temporal
    - Spatial
    - Impulse
  - MPEG post-processing
    - De-blocking
  - Adaptive contrast control (histogram-based, fully-programmable)
  - Advanced Color Management 2D
  - Horizontal luma peaking with coring
  - Sharpness control
    - Vertical and horizontal LTI
    - Horizontal CTI
    - Y/C vertical peaking with adaptive coring

- **Video scaling and composition**
  - Horizontal scaler
    - 17-tap FIR, 64-phase FIR
    - Programmable up scaler [64x]
    - Waterglass scaler
    - Programmable down scaler [1/32x]
    - Non-linear scaler - 3-segment parabola, 17-tap FIR, 64-phase FIR
    - Letterbox support
    - Pan and Scan support
    - 10-bit processing

• Vertical scaler

- 5-tap FIR, 64-phase FIR
- Programmable up scaler [64x]
- Programmable down scaler [1/32x]

1.2.3. Video Input

• Integrated HDMI link and PHY

• Three physical ports (BGA package)

- One physical port (QFP package)

• Single instance of the PHY

• HDMI v1.4a-compliant

• Supports up to 1080p input resolution

• Standby power CEC monitor

• Supports all DTV resolutions (480i/576i/480p/576p/720p/1080i/1080p)

• Capable of carrying IEC61937 compressed audio (Dolby Digital, etc.)

• Integrated High-bandwidth Digital Content Protection (HDCP) cipher

• Direct capture of video, audio, and control information in distinct memory buffers

• Integrated high definition (HD) capture/video inputs

• Color space conversion

• Downscaling to either 4:2:2 or 4:4:4 output to memory

• One (1) YPbPr input

- Up to 165MHz sample rate (Up to 1080p)
- Sync Modes: sync on green (SOG) or luma (SOY) input, mid-point and sync tip clamping
  - SOG or SOY inputs: AC coupled
    Low pass filter (500 KHz)
    Dynamic range 0.5-2.0V
    >1MOhm DC input impedance
- Coast input and support
- Activity/polarity detectors with timing measurement HSYNC present
  VSYNC present
  SOG/SOY present

• 2nd YPbPr input available using S-Video and SIF lines (BGA package)

• One (1) RGB input

- Separate HSYNC, VSYNC inputs
  TTL level-compatible
- Up to WUXGA (1920x1200x60Hz with reduced blanking)
- Support for 10-bit processing

• Up to 165 MHz input bandwidth

• **Standard definition (SD) video inputs**

  • Two (2) CVBS inputs (BGA package)

    - One (1) CVBS input (QFP package)

  • One (1) S-Video input

  • No low-pass filter (LPF) required on SD inputs

1.2.4. Video Output

• **Gradient recovery**

  • Up to 10-bit output for 8-bit video input

• **Overdrive**

  • Improves LCD response time

  • Proprietary Zoran scheme for applying overshoot/undershoot pixel values

• **Display processor**

  • Main output display formats include 1920x1080p, 1680x1050p, 1440x900p, 1366x768p, 1280x768p, 1280x720p and 1024x768p

  • Panel frame rate up to 60Hz support for 1920x1080 panel resolution

  • Output can support 6, 8 or 10-bit panels

  • EIA-608 and EIA-708 closed caption support

  • Horizontal and vertical flip support

• **Integrated dual-channel LVDS output for direct panel display support**

  • Supports up to 165MHz (see below for miniLVDS speed)

  • 1080p output flat panel support

  • 6, 8 and 10-bit panel support

  • Programmable PWM backlight control

  • Spread spectrum clock generation

    - ±6.25% clock modulation

• **Integrated Timing Controller (TCON) for direct panel timing control**

  • Up to 11 user-programmable timing control signals to drive source and gate drivers

  • Fail-safe circuit to protect panel from off-spec timing

  • miniLVDS dual-channel output with TCON signals activated

    - 330MHz single-channel miniLVDS support with TCON signals activated

  • RSDS single-channel output with TCON signals activated (BGA package)

1.2.5. Audio Processing and I/O

• **Five (5) L/R line-level stereo inputs**

  • Multiplexed into a single stereo ADC

    - 16-bit A/D conversion

- 82dB dynamic range and -75dB THD A/D conversion
- Supported audio sampling rates from 32 to 96 KHz

• Up to six (6) channels of audio output, on DDX or I2S lines

• Two (2) DDX differential speaker outputs for direct power-stage drive (channels 0-1)

- Or four (4) single-ended DDX for analog output (channels 0-3)

- Or one (1) stereo I2S output (channels 0-1) I2S data aligned in I2S format; Contact Zoran for left-justified format support

• Two (2) single-ended DDX for line-out (channels 2-3)

- Or two (2) single-ended DDX for analog output (channels 4-5 – only when channels 0-3 are enabled)

- Or two (2) stereo I2S outputs (channels 2-5 – only when I2S channels 0-1 are enabled)

I2S data aligned in I2S format; Contact Zoran for left-justified format support

• I2S audio lines (shared with DDX) can be used as inputs

• Six (6) channel I2S input (3 stereo I2S pairs), data aligned in I2S format; Contact Zoran for left-justified and right-justified formats support

• One (1) S/PDIF output

•Audio decode performed in either/both the audio DSP and CPU

• Audio DSP allows for a significant level of audio post-processing

• L/R downmix for standard stereo digital or line-level output

• Algorithms available for the following:

- Dolby® AC-3 Class A
- MPEG audio Layer 1 (ISO-13818-3)
- “Musicam” MPEG audio Layer 2 (ISO-13818-3)
- MP3 MPEG audio Layer 3 (ISO-13838-3)
- Tone generation
- Post-processing 3D surround & Dialog Clarity (SRS TruSurroundHD™, QSurround)
- Post-processing bass and treble control (Audyssey® ABX)
- Post-processing automatic volume control (Audyssey® AVL)
- Post-processing 5-band equalizer (Audyssey® AEQ)

• Supports audio and video PTS synchronization

• Stores processed streams in memory for playback using APU

• Audio Processing Unit (APU)

• Single independent integrated APU unit

• Audio playback from unified memory

• Audio select, mix, cross-fade, and attenuate all audio sources

• Supports multiple serial data formats

• Supports sample rates up to 96 KHz

• IEC-958 output of encoded or PCM audio data

1.2.6. Video Decoders

• **MPEG MP@HL decoder**

- • Decode of a single HD (MP@HL) stream
- • Decodes of ISO-13818-2 MP@ML, MP@HL
- • Decode of all ATSC-compliant formats
- • Slice-level and frame-level error concealment
- • The decoder engine can decode MPEG-compressed bitstreams as defined in the following specifications:
  - ISO/IEC 13818-2, “Information Technology - Generic Coding of Moving Pictures and Associated Audio Information: Video,” (Up to MP@HL)
  - A/53, “ATSC Digital Television Standard,” (Table 3)
  - DTVMDB04, “DIRECTV MPEG-2 Video Bitstream Specification for the IRD”

• **Integrated NTSC decoder**

- • 3D adaptive comb filter
  - Eliminates dot crawl from vertical or horizontal transitions
  - Eliminates dot crawl from single pixel lines
  - Eliminates false color from high frequency horizontal luma
  - Performs ideal YC separation for still image
  - No loss in horizontal or vertical chroma detail
  - No loss in horizontal or vertical luma detail
  - Performs well both on real video images and on test patterns

- •Adaptive horizontal PLL
  - Automatically adjusts loop bandwidth for signal conditions
  - Automatically detects VCR source and enters optimum tracking mode; most decoders require a “VCR mode” bit to be set to optimally handle VCR signals
  - Automatically detects VCR special effects mode and compensates
  - Comb filter automatically disabled when VCR source is detected
- • Robust sync and DC setup acquisition
  - DC setup and sync recovery is very robust even in the presence of noise, ghosting, and unlock condition
  - Automatic switch over to “fine” mode operation once rough lock is acquired
- • Chroma edge enhancement
  - Improves the horizontal transition of the chroma edge
- • VBI decoder
  - Performs VBI data capture and data slicing embedded in the video lines (composite, S-Video, analog RF input)

• **JPEG decoding**

1.2.7. Front-End Demod / Demux

• **Integrated 8VSB/QAM-B demodulator**

• ATSC 8-VSB demodulation

- Enhanced 8-VSB multi-path performance with wide equalizer coverage
- Superior VSB indoor reception using enhanced equalization and synchronization algorithms, enabling Brazil and other 0 dB ghost reception
- Adaptive control loops dependent upon channel conditions for fast channel acquisition and optimal tracking
- Advanced doppler ghost rejection

• QAM-B demodulation

- ANSI/SCTE 07, ITU-T J.83 Annex B 64-/256-QAM, 5.06/5.36 Msymbol/sec rate, respectively
- Support all DI modes up to I=128, J=8
- 84-tap equalization range: 36 FFE and 48 DFE for superior cable micro-reflections rejection
- Enhanced phase noise rejection
- Excellent burst noise and combined distortion rejection
- Exceptional AM noise rejection
- Fast channel auto search based on auto 64-/256-QAM detection and wide carrier acquisition range

• Advanced system functions

- Accepts 44 MHz from the tuner, eliminating external base-band demodulation
- IF AGC PWM output
- All digital recovery loops
- FEC statistics, receiver status, and channel data such as S/N ratio, equalizer taps, carrier offset, and more are available

•Adaptive selection of receiver

- Adaptive recovery loops based on channel conditions are used to achieve optimum reception for both high doppler echoes conditions and 0dB conditions
- The synchronization and the equalization algorithms are based on both training signals and blind data
- It enables better channel tracking – resulting in achieving all A74 requirements

• Fast channel acquisition in 0dB conditions, < 0.5sec.

• Improves immunity to noise for Brazil ensembles over previous Zoran devices

• Improved phase noise rejection in 0dB conditions

• **NTSC demodulator**

• Fully programmable digital video frequency and group delay equalization including internal digital Nyquist filter and excellent sound carrier digital rejection (>60dB)

• Digital carrier recovery (AFT) with accurate report to host

• Digital carrier recovery without quadrature distortions

- Excellent (110%) over modulation at all white signal (100IRE)
- Digital video IF AGC and optional delayed tuner AGC with programmable take over point
- AM interference rejection

•BTSC/A2 demodulator

- BTSC mono, stereo and SAP DBX decoding for US NTSC TV reception
- A2 mono, stereo and bilingual decoding for Korea NTSC TV reception

• TS demultiplexer

- Maximum transport bitrate: 80 Mbit/sec
- ISO-13818-1 compliant
- Supports PID filtering - total number of simultaneous PID filters: 32
- ATSC-compliant transport demultiplexer
- Maximum filtered (output) demux bit rate of 80 Mbits/sec
- PCR locking using internal STC counter and VCXO control

• Demodulator inputs

- One (1) differential IF pair for all tuner formats
- One (1) SIF (sound IF) for audio-only formats

1.2.8. Memory Support

• 16-bit DDR2 interface (400MHz or 475 MHz)

- Up to 1.87 GByte/second peak memory throughput
  - 400MHz DDR2 sufficient for WXGA designs
  - 400MHz DDR2 sufficient for 1080p designs without TCON/overdrive
  - 533MHz DDR2 (clocked at 475MHz) sufficient for 1080p designs with TCON/overdrive
- Up to 128 MBytes maximum memory
  - Typical 64MByte system implementation for WXGA and 1080p designs
- High performance arbiter with assignable client priorities
- SSTL-18 Class 1 electrical interface

• Serial FLASH

- 40MHz SPI clock
- Up to 16 MBytes maximum memory
- Typical 2-4 MByte system implementation

1.2.9. Integrated TV MicroController

• Support for “Sleep” mode operation

• Front panel I/O support (buttons and display)

- **IRR input**
- **General-purpose 8-bit ADC with 5 multiplexed inputs**
  - i.e. Voltage monitoring
- **Sleep timer**
- **Watchdog timer**
- **GPIO interrupt control**
- **Support for A/V input monitoring**
  - Monitors the HDMI inputs for activity
- **Integrated EDID memory for HDMI inputs and VGA inputs**
  - 512 bytes memory x 4 input ports
- **Support for automatic VGA signal detection and wake-up**
- **HDMI CEC support**
- **UART for debug**
- **Real-time clock support**

1.2.10. Graphics Processing

- **32-bit RGB / YCbCr**
- **16-bit RGB**
- **8-bit indexed with CLUT**
- **Graphics Block Transfer (BLT)**
  - Supports copy, bit depth conversion and alpha blending of 8-, 16- and 32-bit pixel maps with 32-bit output
  - Supports Porter-Duff alpha blending formulas
  - Alpha destination and alpha compare
  - Point, Line, Rectangle, Text and Trapezoid Draw functions
  - Rectangle Fill function

- **Graphics Unit Scaler (GUS)**
  - Support scaling and blending of several graphics planes in a single operation
  - Can also perform simple BLT operations (BitBlt, stretch BitBlt, trapezoid BitBlt, mirror BitBlt, rotate BitBlt)
- **Color space converter**
- **Raster Operation (ROP)**

1.2.11. System Interfaces

- **Two (2) PWM outputs**
- **Three (3) 2-signal UARTs**
  - Maximum baud rate: 115200
  - 16550 compatible
  - Third UART is allocated to TVuC and shared with main CPU UART
- **Two (2) I2C master or slave interfaces**
  - Maximum bitrate: 400 Kb/s
  - Master or slave mode
- **One (1) IR receiver, with hardware demodulation**
- **SPI interface**
  - Up to 40 MHz clock rate
  - Suppports serial FLASH up to 16 MByte
  - Two (2) select signals for peripheral support
- **Integrated USB interface**
  - One High Speed USB v2.0 port

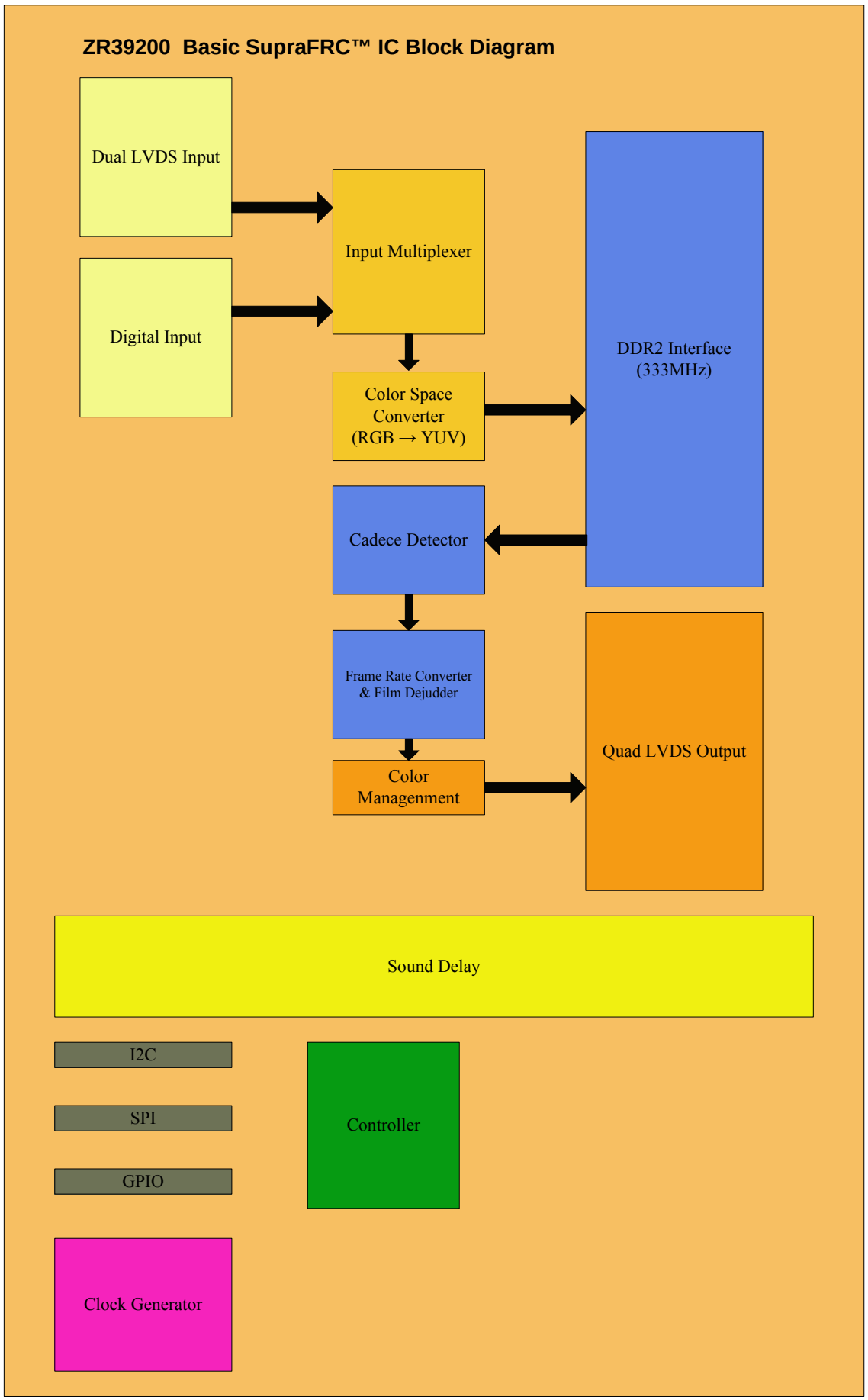
1.2.12. Security Features

- **Integrated One Time Programmable memory (OTP)**
  - 8 Kb of One Time Programmable (OTP) secure memory
  - Used for secure storage:
    - HDCP Key Selection Vectors (KSVs)
    - Error Correction (ECC) Checksum and data
  - Readable ONLY by specific IROM instructions programmed into the SupraHD® 748
  - HDMI keys are encrypted with a proprietary Zoran encryption algorithm during the programming process

1.2.13. Misc. IC Information

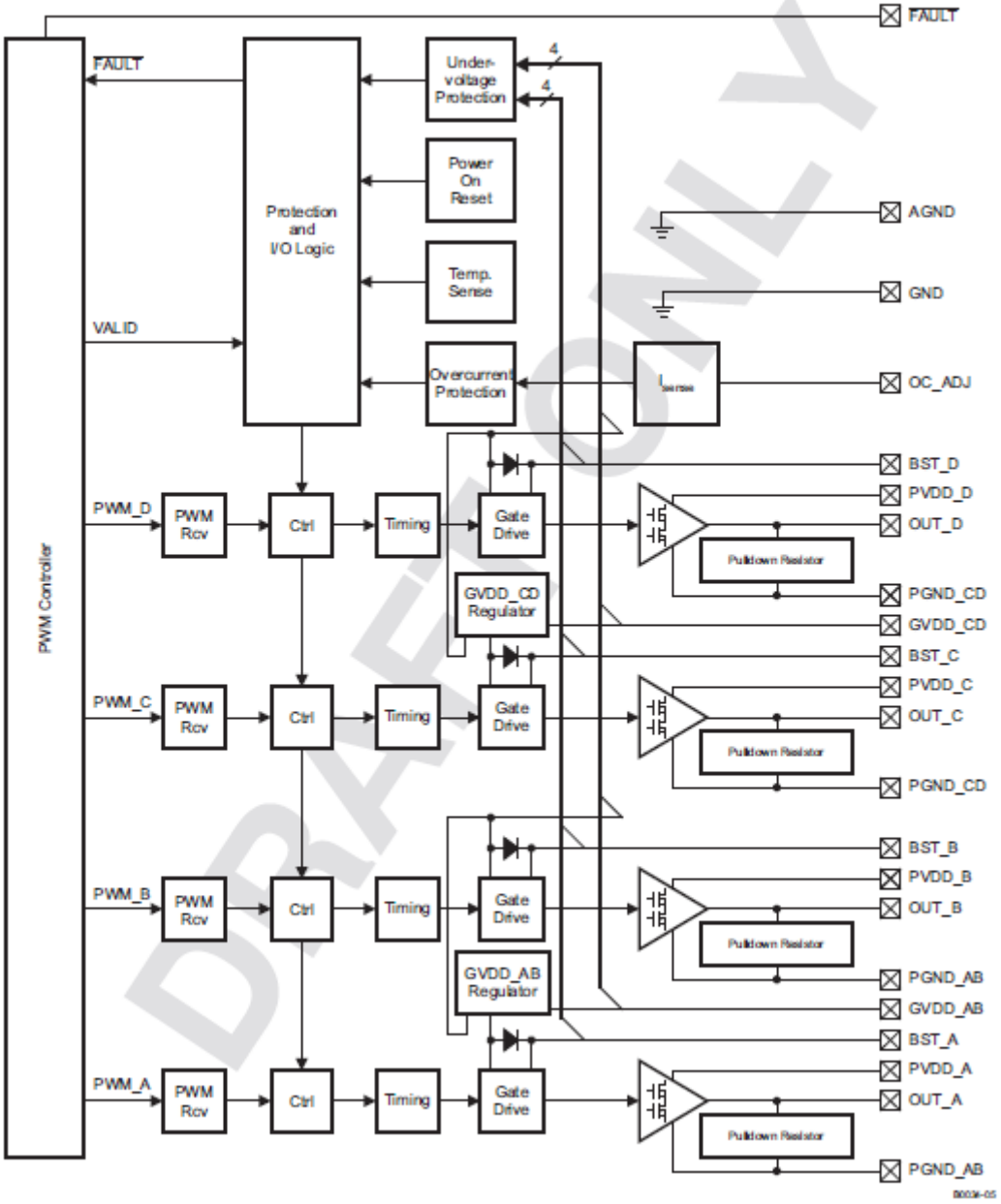
- **25.000 MHz crystal input required to support standard ATSC timing**

2. Zoran ZR39200



3. TEXAS INSTRUMENTS TAS5707L

20-W STEREO DIGITAL AUDIO POWER AMPLIFIER



6. SSE55T 55-inch Wiring Diagram

Wiring Connection

Main board to Panel				
SSE55T DC02L00440I 755 mm				
Panel side			Main board CN5	
FI-RE51S-HF		LVDS cable	A2006W00-2X17P	
1	GND	NC		
2	NC	NC		
3	NC	NC		
4	NC	NC		
5	NC	NC		
6	NC	NC		
7	LVDS Select	YELLOW	21	LVDS_SEL
8	EXTV$_{BR-B}$	NC		
9	VBR-B out	NC		
10	OPC Enable	NC		
11	GND	BLACK	13	GND
12	R1AN	WHITE	23	TXAE_0N
13	R1AP	BLACK	24	TXAE_0P
14	R1BN	WHITE	10	TXAE_1N
15	R1BP	BROWN	9	TXAE_1P

Main board to Panel				
SSE55T DC02L00430I 920 mm				
Panel side			Main board CN1	
FI-RE51S-HF		LVDS cable	A2006W00-2X16P	
1	NC	NC		
2	NC	NC		
3	NC	NC		
4	NC	NC		
5	NC	NC		
6	NC	NC		
7	NC	NC		
8	NC	NC		
9	GND	NC		
10	RA3N	WHITE	25	TXAO_0N
11	RA3P	BLACK	26	TXAO_0P
12	RB3N	WHITE	12	TXAO_1N
13	RB3P	BROWN	11	TXAO_1P
14	RC3N	WHITE	8	TXAO_2N
15	RC3P	RED	7	TXAO_2P

Main board to Speaker				
SSE55T DC02V03770I L: 410 & R: 1200mm				
Main board CN3			Speaker	
JWT A2001WV2-4P		Color	LEFT	
1	SPK_OUTR+	Black	P3	Speaker -
2	SPK_OUTR-	Red	P2	Speaker +
			Right	
3	SPK_OUTL-	White	P4	Speaker +
4	SPK_OUTL+	Green	P5	Speaker -

Main board to IR board				
SSE55T DC02V03760I 365 mm				
IR board CN1			Main board CN4	
JWT A2001W02-5P		Color	JWT A2001W02-5P	
1	VCC5_0_STB	Red	1	VCC5_0_STB
2	IRR	White	2	IRR

16	R1CN	WHITE	7	TXAE_2N
17	R1CP	RED	8	TXAE_2P
18	GND	ORANGE	19	GND
19	R1CLKN	WHITE	6	TXAE_CN
20	R1CLKP	ORANGE	5	TXAE_CP
21	GND	YELLOW	20	GND
22	R1DN	WHITE	1	TXAE_3N
23	R1DP	YELLOW	2	TXAE_3P
24	R1EN	WHITE	3	TXAE_4N
25	R1EP	GREEN	4	TXAE_4P
26	NC	NC		
27	Bit Select	NC		
28	R2AN	WHITE	31	TXBE_0N
29	R2AP	BLACK	32	TXBE_0P
30	R2BN	WHITE	27	TXBE_1N
31	R2BP	BROWN	28	TXBE_1P
32	R2CN	WHITE	33	TXBE_2N
33	R2CP	RED	34	TXBE_2P
34	GND	NC		
35	R2CLKN	WHITE	25	TXBE_CN
36	R2CLKP	ORANGE	26	TXBE_CP
37	GND	NC		
38	R2DN	WHITE	29	TXBE_3N
39	R2DP	YELLOW	30	TXBE_3P
40	R2EN	WHITE	11	TXBE_4N

16	GND	BLACK	13	GND
17	RCLK3N	WHITE	5	TXAO_CN
18	RCLK3P	ORANGE	6	TXAO_CP
19	GND	BLACK	14	GND
20	RD3N	WHITE	4	TXAO_3N
21	RD3P	YELLOW	3	TXAO_3P
22	RE3N	WHITE	2	TXAO_4N
23	RE3P	GREEN	1	TXAO_4P
24	GND	NC		
25	GND	NC		
26	RA4N	WHITE	29	TXBO_0N
27	RA4P	BLACK	30	TXBO_0P
28	RB4N	WHITE	31	TXBO_1N
29	RB4P	BROWN	32	TXBO_1P
30	RC4N	WHITE	28	TXBO_2N
31	RC4P	RED	27	TXBO_2P
32	GND	BLACK	19	GND
33	RCLK4N	WHITE	24	TXBO_CN
34	RCLK4P	ORANGE	23	TXBO_CP
35	GND	BLACK	20	GND
36	RD4N	WHITE	22	TXBO_3N
37	RD4P	YELLOW	21	TXBO_3P
38	RE4N	WHITE	10	TXBO_4N
39	RE4P	GREEN	9	TXBO_4P
40	GND	NC		

3	GND	Black	3	GND
3	LED_R	Orange	4	LED_R
5	Light Sensor	YELLOW	5	Light_Sensor

41	R2EP	RED	12	TXBE_4P
42	NC	NC		
43	NC	NC		
44	GND	NC		
45	GND	NC		
46	GND	NC		
47	NC	NC		
48	VLCD	RED	15	LVDS_PWR
49	VLCD	RED	16	LVDS_PWR
50	VLCD	RED	17	LVDS_PWR
51	VLCD	RED	18	LVDS_PWR

41	GND	NC		

Power/B to Main board				
SSE55T DC02P01670I 760 mm				
Power/B P802			Main board CN2	
A2008H00-16P		Color	A2001H02-16P	
1	GND	Black	1	GND
2	GND	Brown	2	GND
3	24Va	Red	3	Audio power
4	24Va	Orange	4	Audio power
5	GND	Yellow	5	GND
6	GND	Green	6	GND
7	GND	Blue	7	GND
8	12Vcc	Purple	8	12V panel
9	12Vcc	Gray	9	12V panel
10	5Vcc	White	10	5V standby
11	5Vcc	Black	11	5V standby
12	5Vcc	--	16	BL_ERROR
13	PW_ON	Red	12	PW_EN
14	ACD	Orange	13	PG
15	DIM	Yellow	15	BL_DIM
16	BL_ON	Green	14	BL_EN

Power/B to Panel Inverter/B(LG panel)															
SSE55T DC02P00780I (for LG panel) 410 mm						SSE55T DC02P00760I(for LG panel) 680 mm					
Power/B P803			Panel BL			Power/B P804			Panel BL		
A2008H00-14P		Color	A2001H02-14P			A2008H00-14P		Color	A2001H02-12P		
1	24Vcc	Black	1	24Vcc		1	24Vcc	Black	1	24Vcc	
2	24Vcc	Brown	2	24Vcc		2	24Vcc	Brown	2	24Vcc	
3	24Vcc	Red	3	24Vcc		3	24Vcc	Red	3	24Vcc	
4	24Vcc	Orange	4	24Vcc		4	24Vcc	Orange	4	24Vcc	
5	24Vcc	--	5	24Vcc		5	24Vcc	--	5	24Vcc	
6	GND	Green	6	GND		6	GND	Green	6	GND	
7	GND	Blue	7	GND		7	GND	Blue	7	GND	
8	GND	Purple	8	GND		8	GND	Purple	8	GND	
9	GND	Gray	9	GND		9	GND	Gray	9	GND	
10	GND	--	10	GND		10	GND	--	10	GND	
11	NC	--	11	DET		11	NC	--	11	NC	
12	BL_ON	Brown	12	VBLON		12	BL_ON	--	12	NC	
13	DIM	Black	13	PDIM		13	DIM	--			
14	NC	--	14	NC		14	NC	--			

Power/B to Panel Inverter/B(AUO panel)										
SSE55T DC02P00710I (for AUO panel) 410 mm						SSE55T DC02P00720I (for AUO panel) 680 mm				
Power/B P803			Panel BL			Power/B P804			Panel BL	
A2008H00-14P		Color	A2001H02-14P			A2008H00-14P		Color	A2001H02-14P	
1	24Vcc	Black	1	24Vcc		1	24Vcc	Black	1	24Vcc
2	24Vcc	Brown	2	24Vcc		2	24Vcc	Brown	2	24Vcc
3	24Vcc	Red	3	24Vcc		3	24Vcc	Red	3	24Vcc
4	24Vcc	Orange	4	24Vcc		4	24Vcc	Orange	4	24Vcc
5	24Vcc	--	5	24Vcc		5	24Vcc	--	5	24Vcc
6	GND	Green	6	GND		6	GND	Green	6	GND
7	GND	Blue	7	GND		7	GND	Blue	7	GND
8	GND	Purple	8	GND		8	GND	Purple	8	GND
9	GND	Gray	9	GND		9	GND	Gray	9	GND
10	GND	--	10	GND		10	GND	--	10	GND
11	NC	--	11	DET		11	NC	--	11	DET
12	BL_ON	Brown	12	VBLON		12	BL_ON	Brown	12	VBLON
13	DIM	Black	14	PDIM		13	DIM	Black	14	PDIM
14	NC	--	13	VDIM		14	NC	--	13	VDIM

7. Trouble shooting

1. Fault clearance

Before calling your dealer or service center for assistance, check the matters below once again.

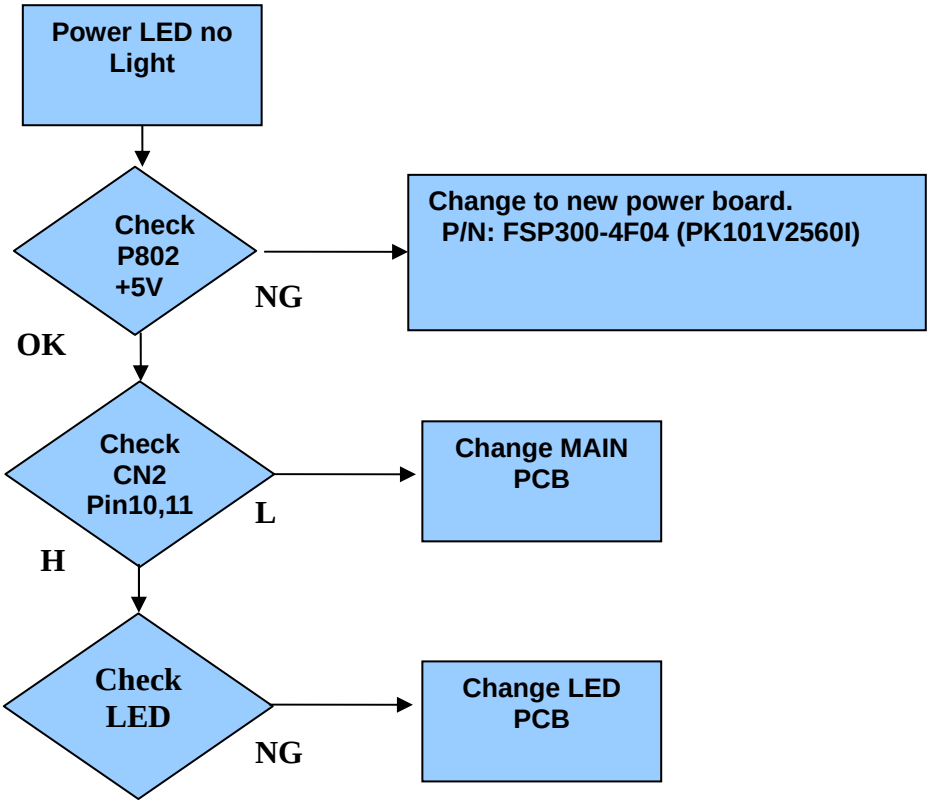
(1) Make sure you have connected LCD TV to your equipment as described in the section " CONNECTING LCD TV".
(2) Check cable connection. Verify that all external equipment and power cord are properly connected.
(3) Verify that all power is switched on.
(4) If LCD TV still dose not produce an image, re-start the external equipment.
(5) If the image still dose not appear, unplug LCD TV from the external equipment and check the external equipment. The problem may be with your graphics controller rather than with LCD TV. (When you reconnect LCD TV, remember to turn the external equipment and TV off before you power up LCD TV. Power the equipment back on in order of LCD TV and external equipment.)
(6) If the problem still exists, check the following chart.

Problem	Try these Solutions
NO POWER	• Plug this LCD TV into the AC outlet. • Press POWER button on side control or on Remote Control to turn on LCD TV. • Check POWER Indicator. If this indicator blank, this TV has getting trouble.
Remote Control dose not work	• Check the batteries. • Make sure nothing is between the Remote Receiver and the Remote Control. • Make sure you are not too far from LCD TV when using Remote Control. • Maximum operating range is 5m. • Is direct sunlight or strong artificial light shining on LCD TV‘s Infrared Remote Receiver? Eliminate the light by closing curtains, pointing the light in a different direction, etc.
No image	• Check the connection between the external equipment and LCD TV. • When turning LCD TV on, it takes a few seconds to display the image. • Check the system that you select is corresponding with the external equipment or the video equipment. • Make sure the temperature is not out of the Operating Temperature (0°C ~ 50°C). • Turn off power, then turn on again, re-start LCD TV.
No sound	• Check Audio cable connection from Audio input source. • Adjust the Sound System. • Press VOLUME (+) button. • Press MUTE button.
There are tiny black points and/or bright point on the TV	• Dark or bright points of light (red, green, or blue) may appear on the screen. This is a characteristic of the LCD panel, not a malfunction of the LCD TV. • LCD panel is produced with very high accuracy technology. There is 99.99% or more dot pixel, but there is also 0.01 % or less of dot pixel lack or dot pixel that is constantly lighted. This is not defect. • Regarding LCD panel characteristic, it may occur picture remain (look like a mirror) when the screen is changed if it displays same screen for a long time. Changing the picture or turn-off the power supply may recover. • Stripe pattern (more, interference stripes) may show up on the screen depends on the reflected picture.
Abnormal color of image	• Adjust the value of color. • Select different color system.

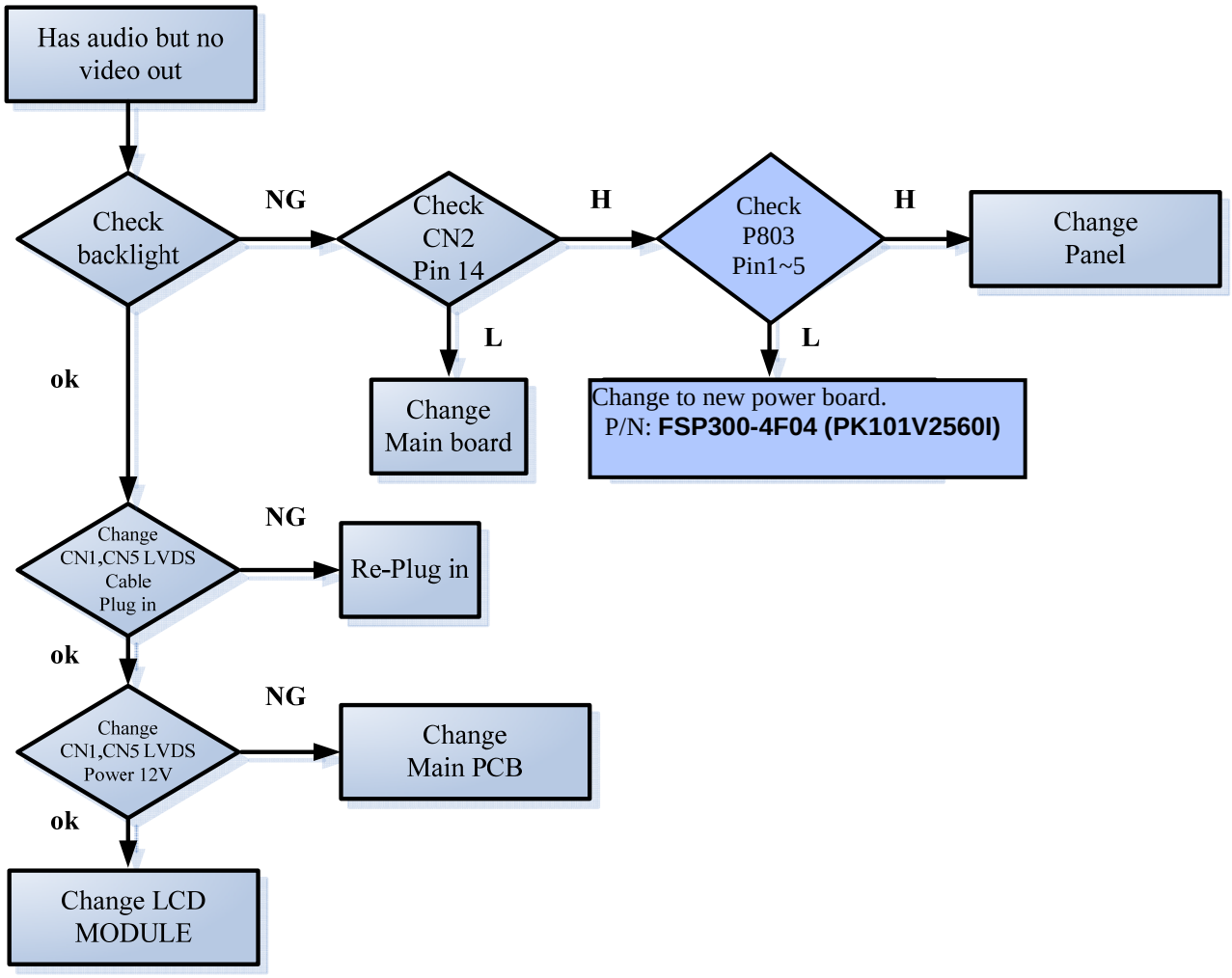
2. Troubleshooting guide

The flow chart shown below will help you to troubleshoot your Televison set with it doesn't display normally. Each procedure offers a simple way to check for system errors. Before starting, ensure that there is a signal in and that the Televison is turned on.

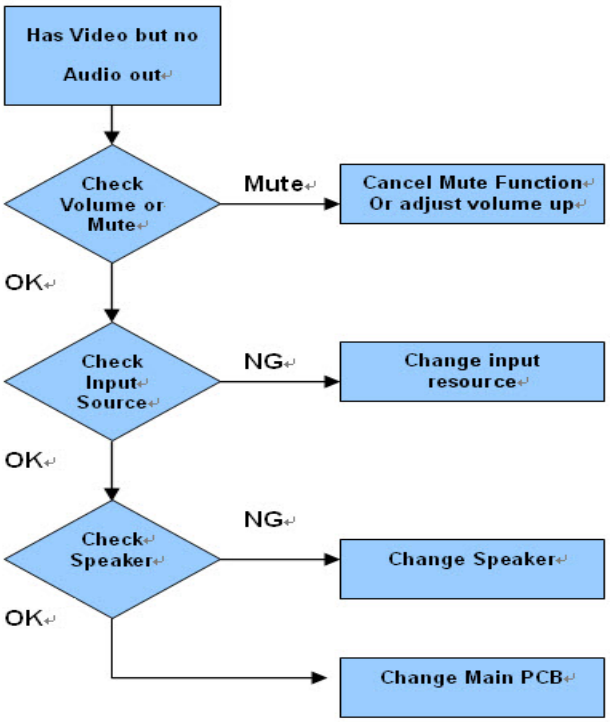
2-1 Power LED no light



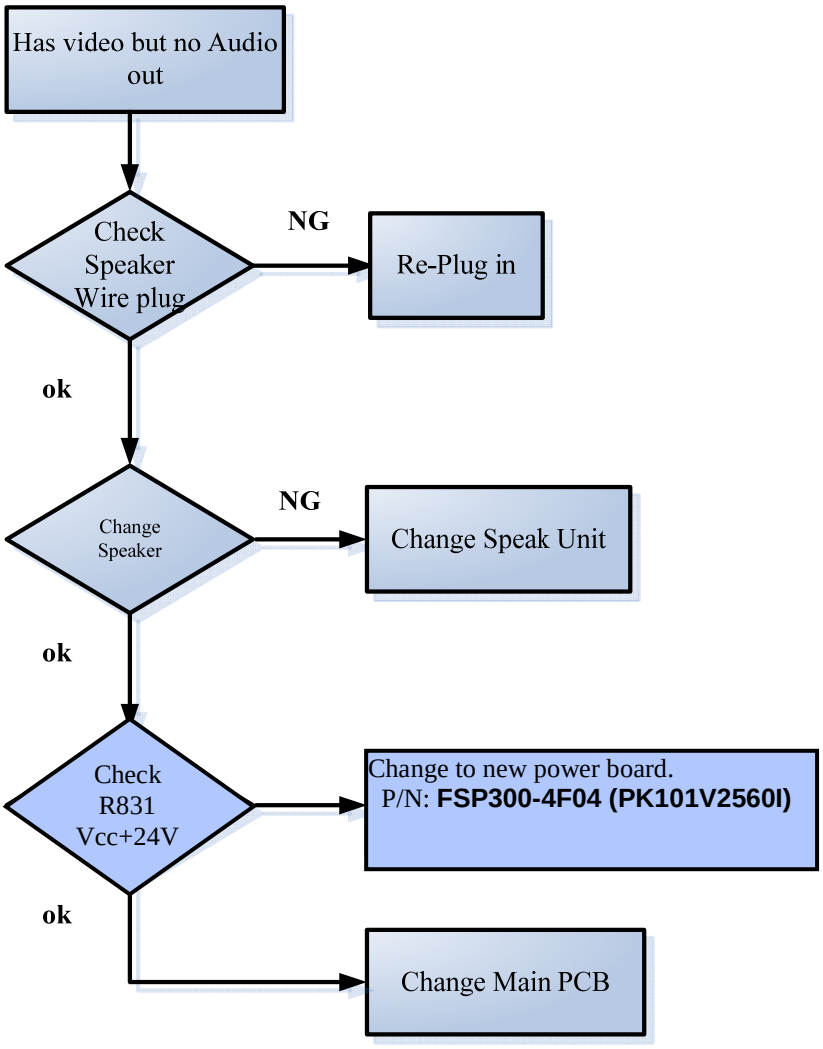
2-2 Has audio but no video out



2-3 Has video but no audio out step 1



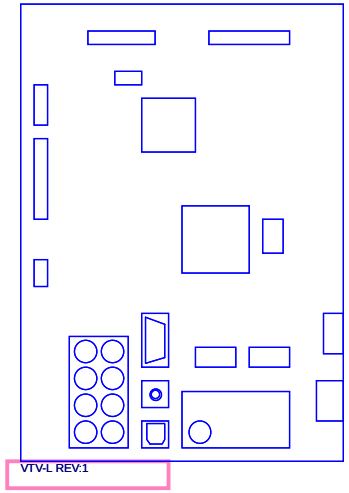
2-4 Has video but no audio out step 2



8.SCHEMATIC DIAGRAM

ELECTRON-55"

PCB1



E1

FW1

FIRMWARE

FW A69

Stuffing Options

A)

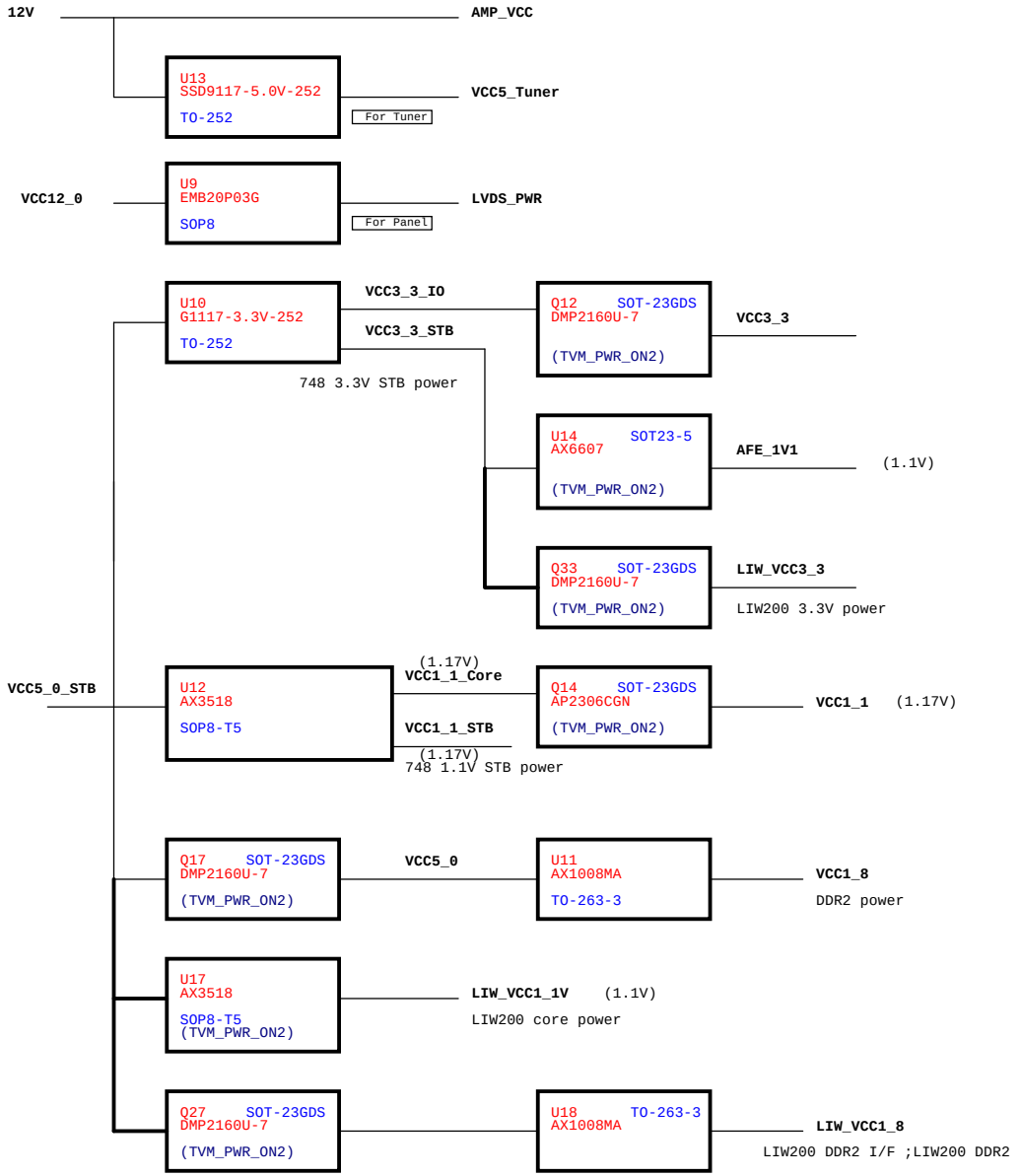
B)

C)

D)

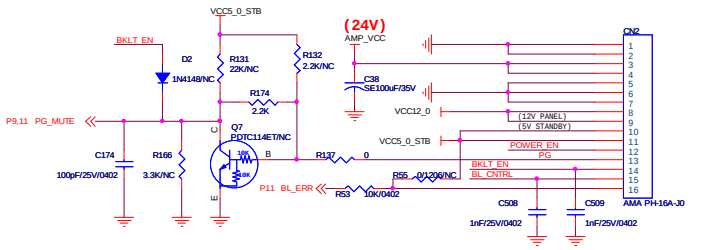
Note: * - Default setting.

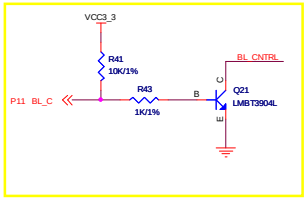
ZR39748 + ZR39200 Power Tree (120Hz)

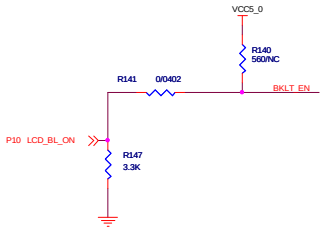


COMPAL OPTOELECTRONICS CO., LTD

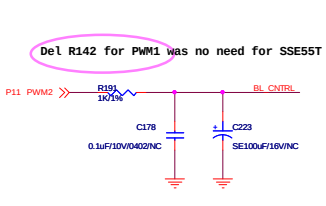
Title: SCHEMATIC,M/B VTV-L55612		
Size: A4	Document Number: 401C54	Rev: 1A
Date: Wednesday, March 28, 2012	Sheet 2 of 20	

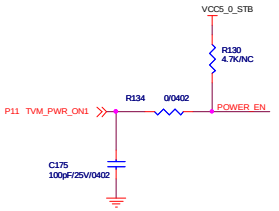


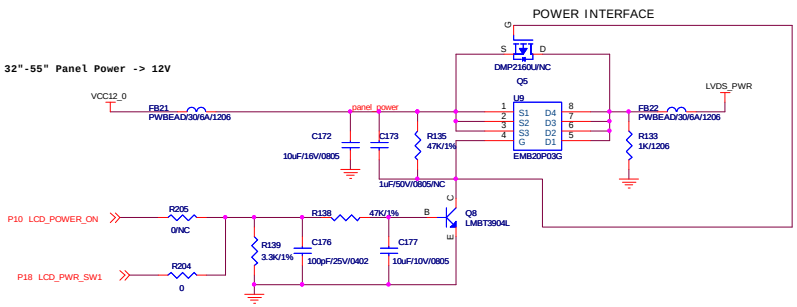


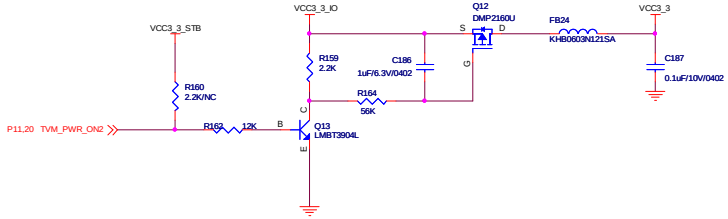


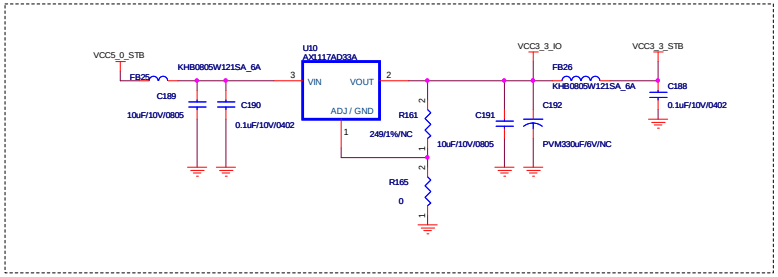
Del R142 for PWM1 was no need for SSE55T

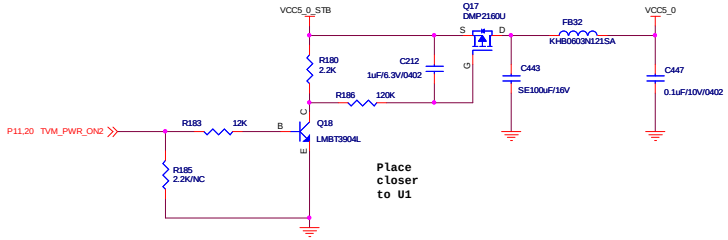


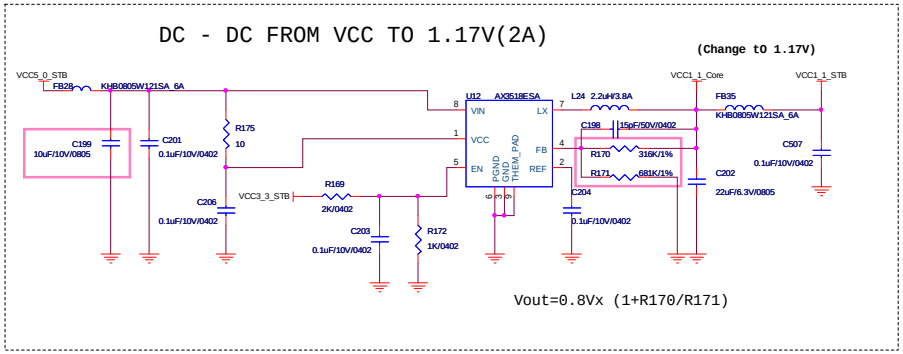


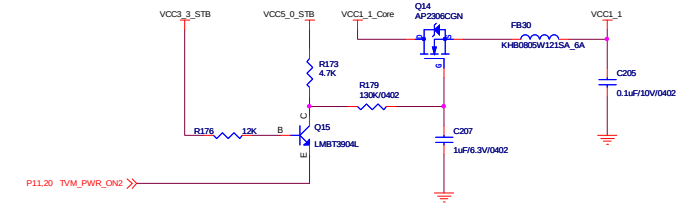


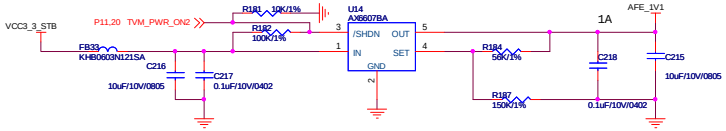


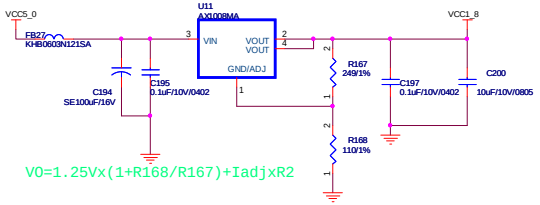












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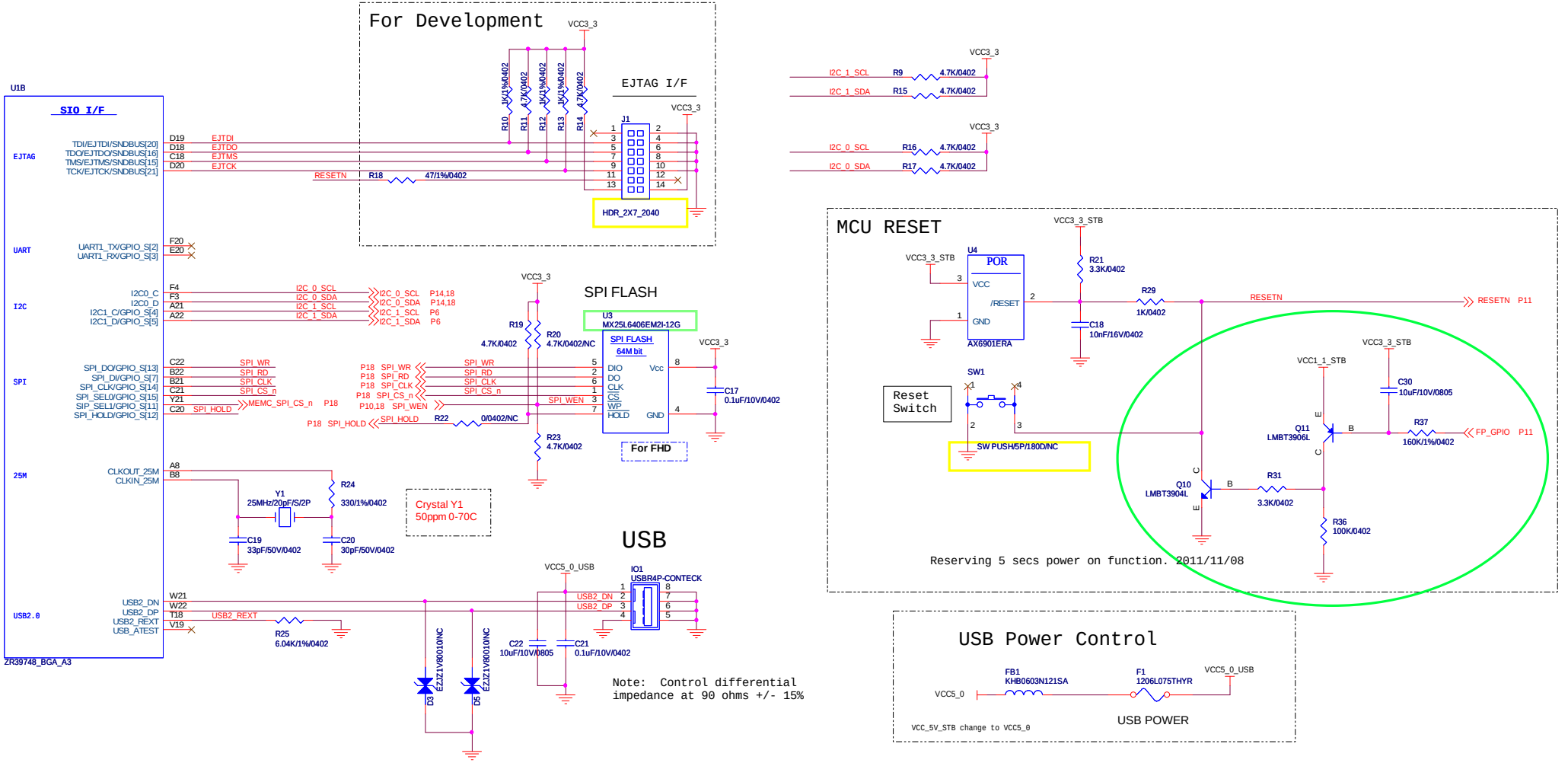

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RUN AS 100 OHM DIFFERENTIAL PAIRS

IO4

HDMI_CONN_RF

HDMI0_D2P
HDMI0_D2N
HDMI0_D1P
HDMI0_D1N
HDMI0_D0P
HDMI0_D0N
HDMI0_CLKP
HDMI0_CLKN
HDMI_CEC
R358 47K/1%
R359 47K/1%
HDMI0_DDC_SCL
HDMI0_DDC_SDA
HDMI0_5V
C370 0.1uF/10V/0402
R365 10K/1%
R357 1K/1%/NC
R382 1K/1%
HDMI0_HPD
R361 10K/1%/NC

HDMI0_DDC_SCL P11
HDMI0_DDC_SDA P11
HDMI0_5V P11
HDMI0_HPD P11

VCC3_3_STB
D7 BAT54
R399 27K
HDMI_CEC
Q23 2N7002E/NC
P11 HDMI_CEC_IN
HDMI_CEC_IN

Low speed signals locate in page11, standby block.

Run as 50 Ohm Single Ended Impedance with 100 Ohm differential pairs

U1C HDMI0 I/F

HDMI0_D2P Y2
HDMI0_D2N Y1
HDMI0_D1P W2
HDMI0_D1N W1
HDMI0_D0P V2
HDMI0_D0N V1
HDMI0_CLKP U2
HDMI0_CLKN U1

HDMI0_D2P
HDMI0_D2N
HDMI0_D1P
HDMI0_D1N
HDMI0_D0P
HDMI0_D0N
HDMI0_CLKP
HDMI0_CLKN

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RUN AS 100 OHM DIFFERENTIAL PAIRS

IO3

NIKTTECH/HDMI_SMD_V

HDMI1_D2P
HDMI1_D2N
HDMI1_D1P
HDMI1_D1N
HDMI1_D0P
HDMI1_D0N
HDMI1_CLKP
HDMI1_CLKN
HDMI_CEC
R372 47K/1%
R373 47K/1%
HDMI1_DDC_SCL
HDMI1_DDC_SDA
HDMI1_5V
C400 0.1uF/10V/0402
R375 10K/1%
R371 1K/1%/NC
R383 1K/1%
HDMI1_HPD
R374 10K/1%/NC

HDMI1_DDC_SCL P11
HDMI1_DDC_SDA P11
HDMI1_5V P11
HDMI1_HPD P11

Run as 50 Ohm Single Ended Impedance with 100 Ohm differential pairs

U1D HDMI1 I/F

HDMI1_D2P T2
HDMI1_D2N T1
HDMI1_D1P R2
HDMI1_D1N R1
HDMI1_D0P P2
HDMI1_D0N P1
HDMI1_CLKP N2
HDMI1_CLKN N1

HDMI1_D2P
HDMI1_D2N
HDMI1_D1P
HDMI1_D1N
HDMI1_D0P
HDMI1_D0N
HDMI1_CLKP
HDMI1_CLKN

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RUN AS 100 OHM DIFFERENTIAL PAIRS

IO2

NIKTTECH/HDMI_SMD_V

HDMI2_D2P
HDMI2_D2N
HDMI2_D1P
HDMI2_D1N
HDMI2_D0P
HDMI2_D0N
HDMI2_CLKP
HDMI2_CLKN
HDMI_CEC
R398 47K/1%
R396 47K/1%
HDMI2_DDC_SCL
HDMI2_DDC_SDA
HDMI2_5V
HDMI2_ARC
C401 0.1uF/10V/0402
R376 10K/1%
R397 1K/1%/NC
R394 1K/1%
HDMI2_HPD
R395 10K/1%/NC

HDMI2_DDC_SCL P11
HDMI2_DDC_SDA P11
HDMI2_5V P11
HDMI2_HPD P11

P9 IEC958_O
R122 1K/NC
Q9 MMBT3904L/NC
R99 30/1%/NC
C29 1uF/6.3V/0402/NC
R101 750/NC
R124 0/NC
HDMI2_ARC
R97 1K/NC
R123 3K/NC

Run as 50 Ohm Single Ended Impedance with 100 Ohm differential pairs

U1E HDMI2 I/F

HDMI2_D2P M2
HDMI2_D2N M1
HDMI2_D1P L2
HDMI2_D1N L1
HDMI2_D0P K2
HDMI2_D0N K1
HDMI2_CLKP J2
HDMI2_CLKN J1

HDMI2_D2P
HDMI2_D2N
HDMI2_D1P
HDMI2_D1N
HDMI2_D0P
HDMI2_D0N
HDMI2_CLKP
HDMI2_CLKN

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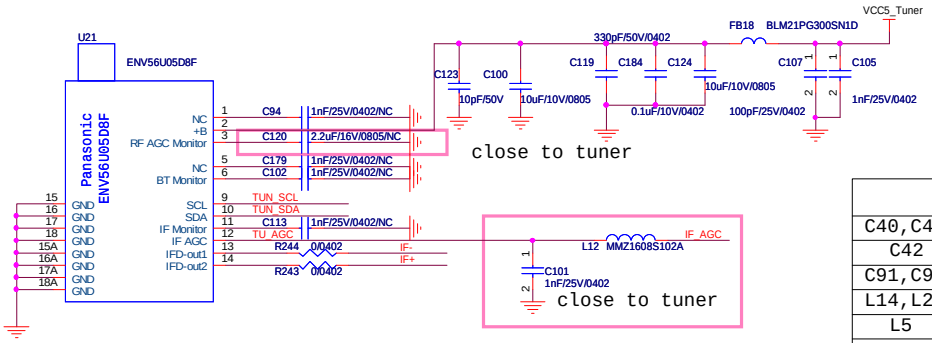
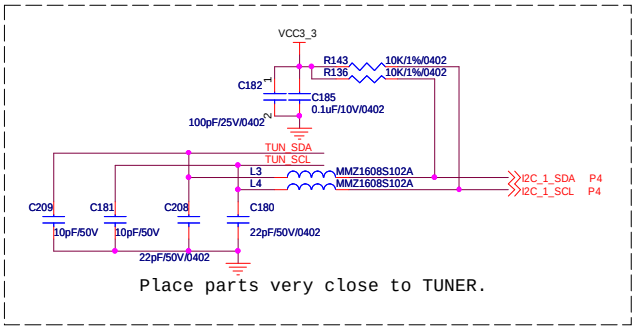
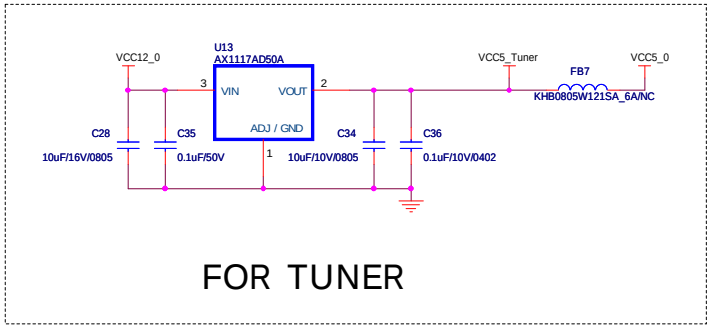
I2C clock - 100KHz(recommended)
I2C Address 0x32/33(AS open)

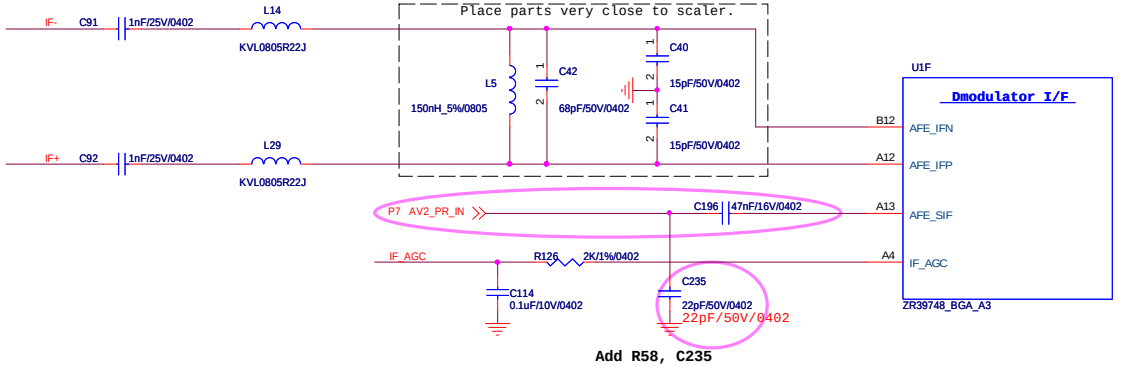
I2C ADDR 0xC2/0xC3



	Pansonic
C40,C41	15pF
C42	68pF
C91,C92	1nF
L14,L29	220nH
L5	150nH







Add R58, C235
C235 should 22pF if 2nd Y/Pb/Pr joint 748 directly
Modify C196 from 10nF to 47nF
for reserve 2nd Y/Pb/Pr

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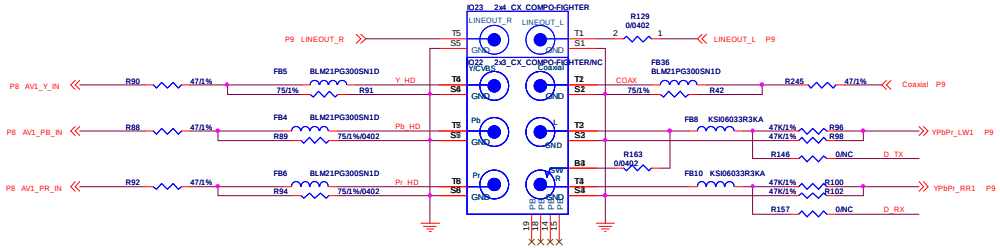
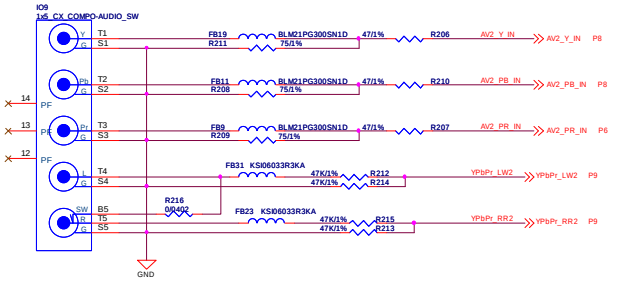
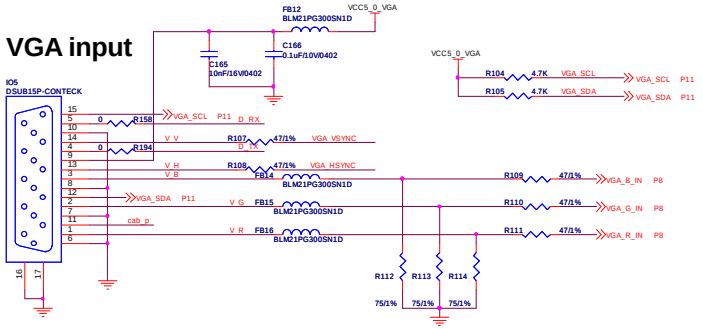
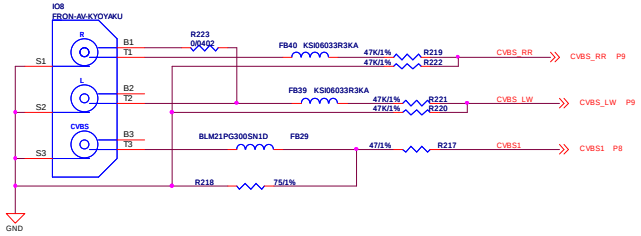
Component input A/V input

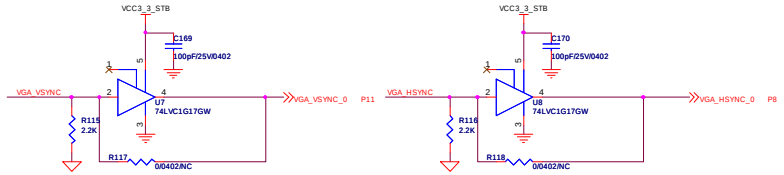


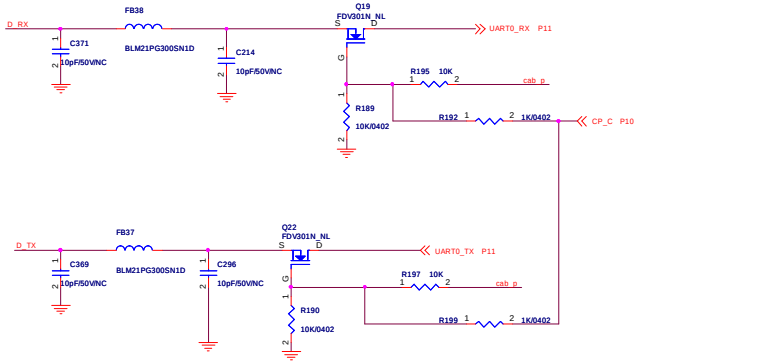


VGA input

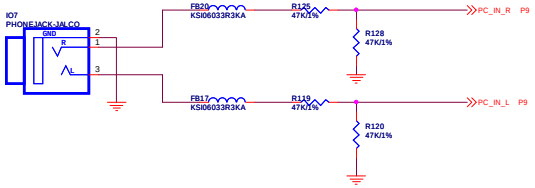


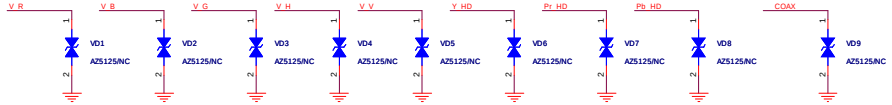






VGA Audio input





Del SPDIF-OUT function
All material NC no BOM effort.

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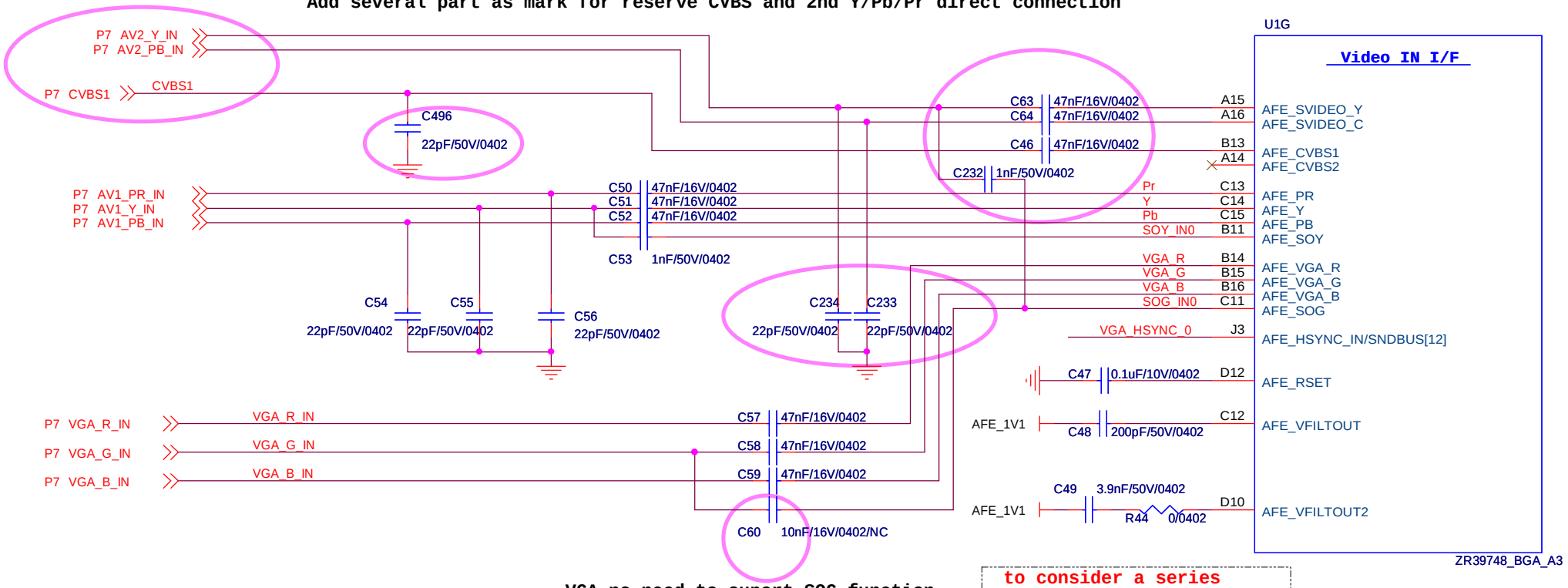
Add several part as mark for reserve CVBS and 2nd Y/Pb/Pr direct connection



VGA no need to suport SOG function

to consider a series resistor to C49 (will decide during the layout)

VGA_HSYNC_0 → VGA_HSYNC_0 P7

VGA_VSYNC_0 → VGA_VSYNC_0 P7,11

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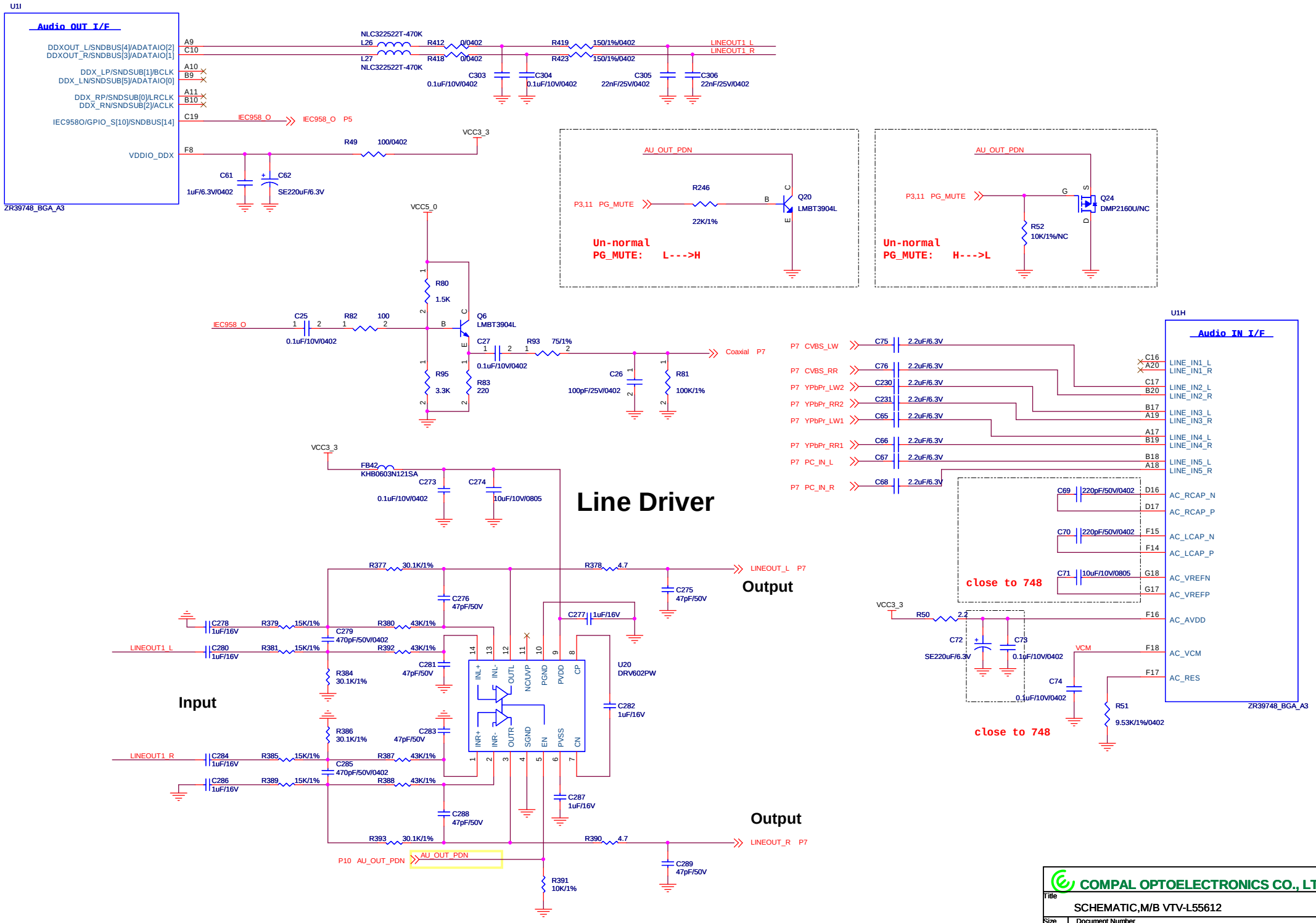

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U1K

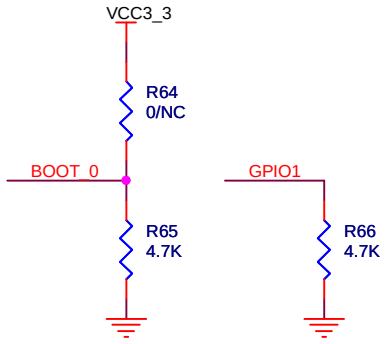
GPIO I/F

GPIO_P0/SNDBUS[0]/LRCLK	F2	BOOT_0	R47 330/0402	LRCLK	LRCLK P14
GPIO_P1/SNDBUS[1]/BCLK	L3	GPIO1	R45 330/0402	BCLK	BCLK P14
GPIO_P4/SNDBUS[4]/ACLK	F1		R48 100/0402	ACLK	ACLK P14
GPIO_P5/SNDBUS[5]/ADATAIO	G4		R46 330/0402	ADATAIO	ADATAIO P14
GPIO_P6/SNDBUS[6]	G3	R188 0/0402			SPI_WEN P4,18
GPIO_P7/SNDBUS[7]	G2	SYS_POWER_ON			R291 0 LCD_POWER_ON P3
GPIO_P8/SNDBUS[8]	G1	R63 0/0402			LVDS_SEL P16
GPIO_P9/SNDBUS[9]	H4	LCD_BL_ON			LCD_BL_ON P3
GPIO_P10/SNDBUS[10]	H3	Amp_RESET			Amp_RESET P14
GPIO_P11/SNDBUS[11]/PWM2	H2				AU_OUT_PDN P9
GPIO_P12/SNDBUS[12]	H1				CP_C P7
GPIO_P14/SNDBUS[14]	J4		R461 0/0402	LIW_RESETN	LIW_RESETN P18
GPIO_P16/SNDBUS16	N3		R464 0/0402		LED_G P11

ZR39748_BGA_A3

Bootstrap Configuration:
Please note: this section can not be removed

BOOT_0=0 boot from SPI
BOOT_0=1 boot from UART



Placement on TOP_Layer

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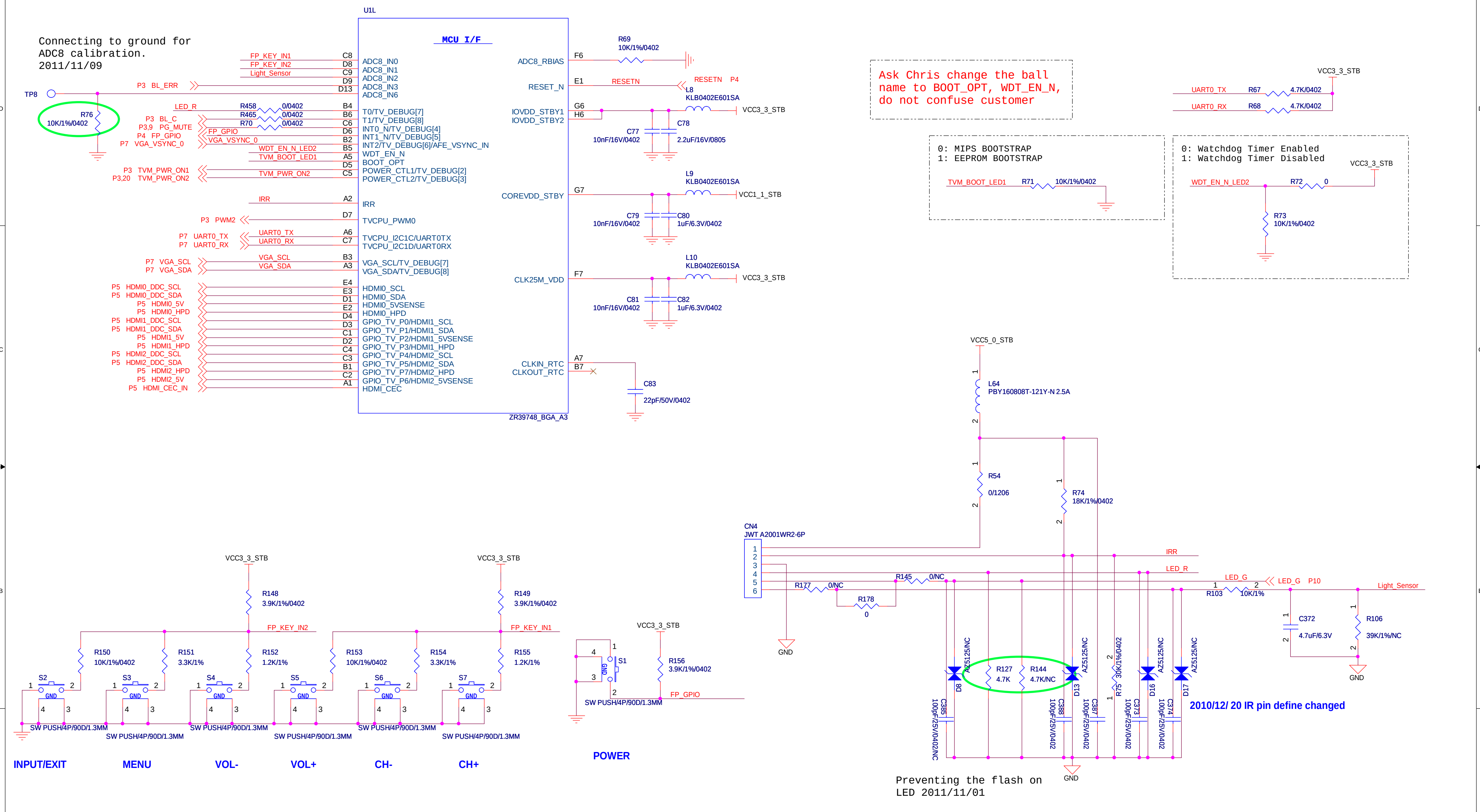

ADC Input / ADC level	FP_KEY_IN2	FP_KEY_IN1
2.36V	Input / EXT	Vol+
1.50V	Menu	CH-
0.77V	Vol-	CH+

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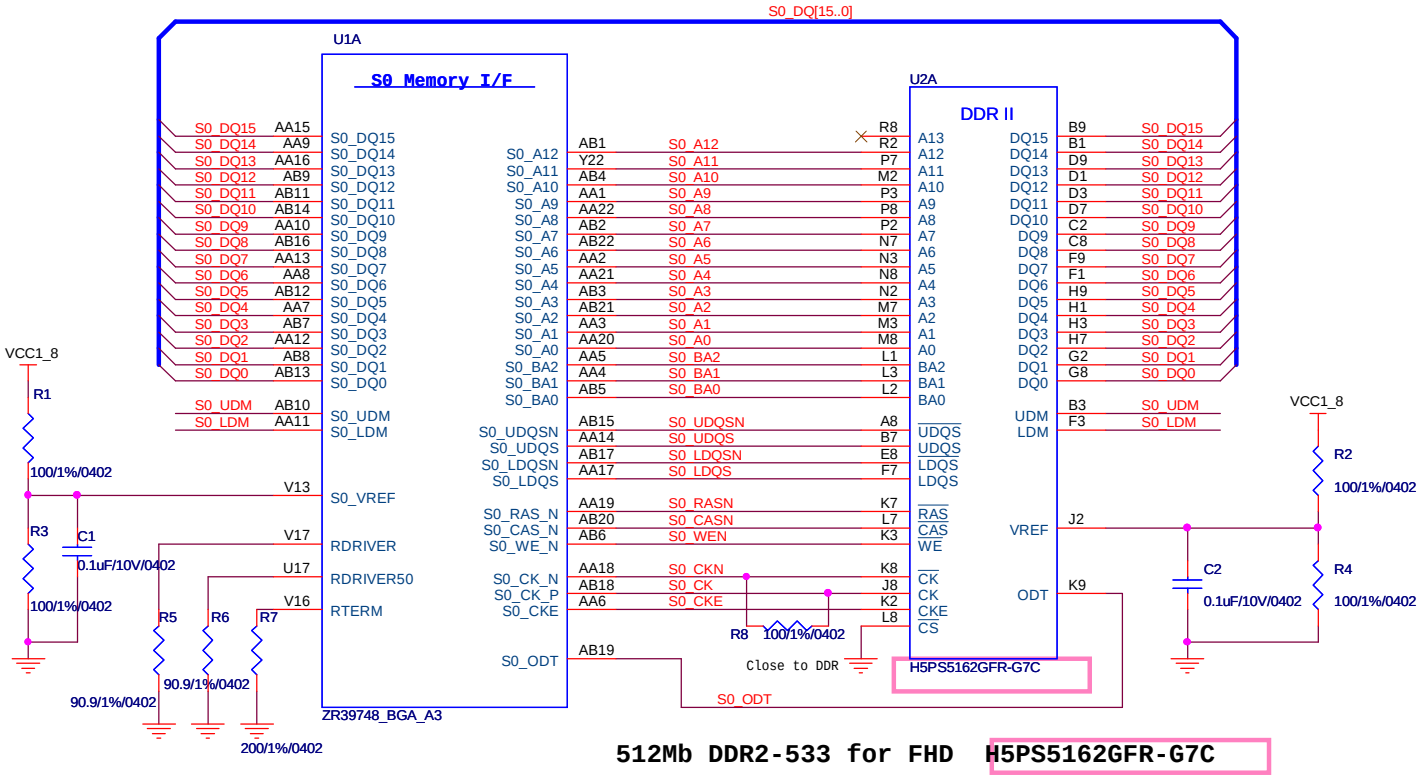
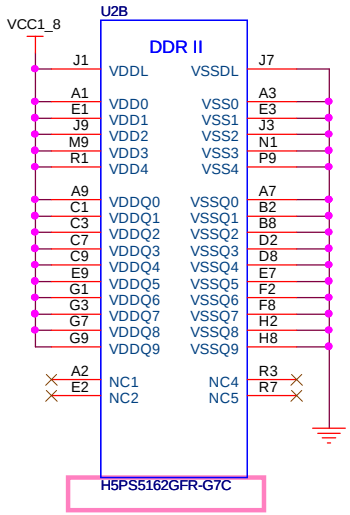
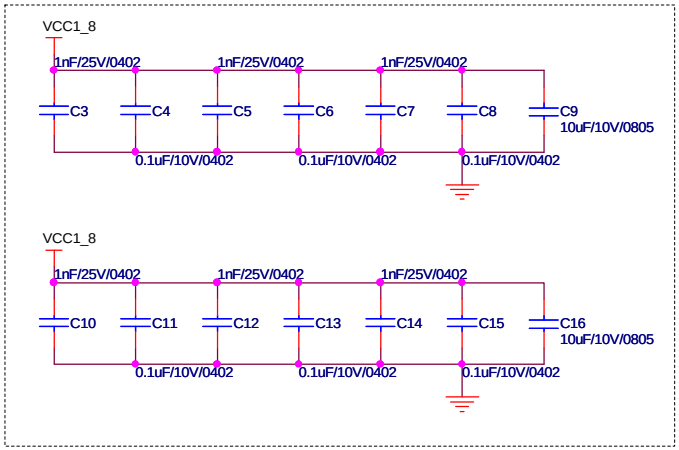


512Mb DDR2-533 for FHD H5PS5162GFR-G7C



DDR2-SDRAM Bypass Capacitors



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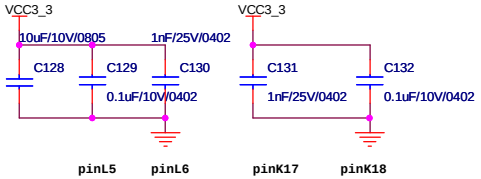
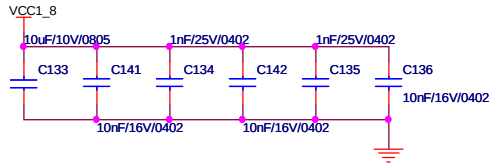
3.3V Bypass Capacitors



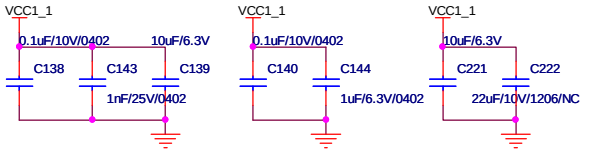
place C129 and C130 close to balls L5 and L6, and place C131 and C132 close to balls K17 and K18, place C128 between the 2 pairs

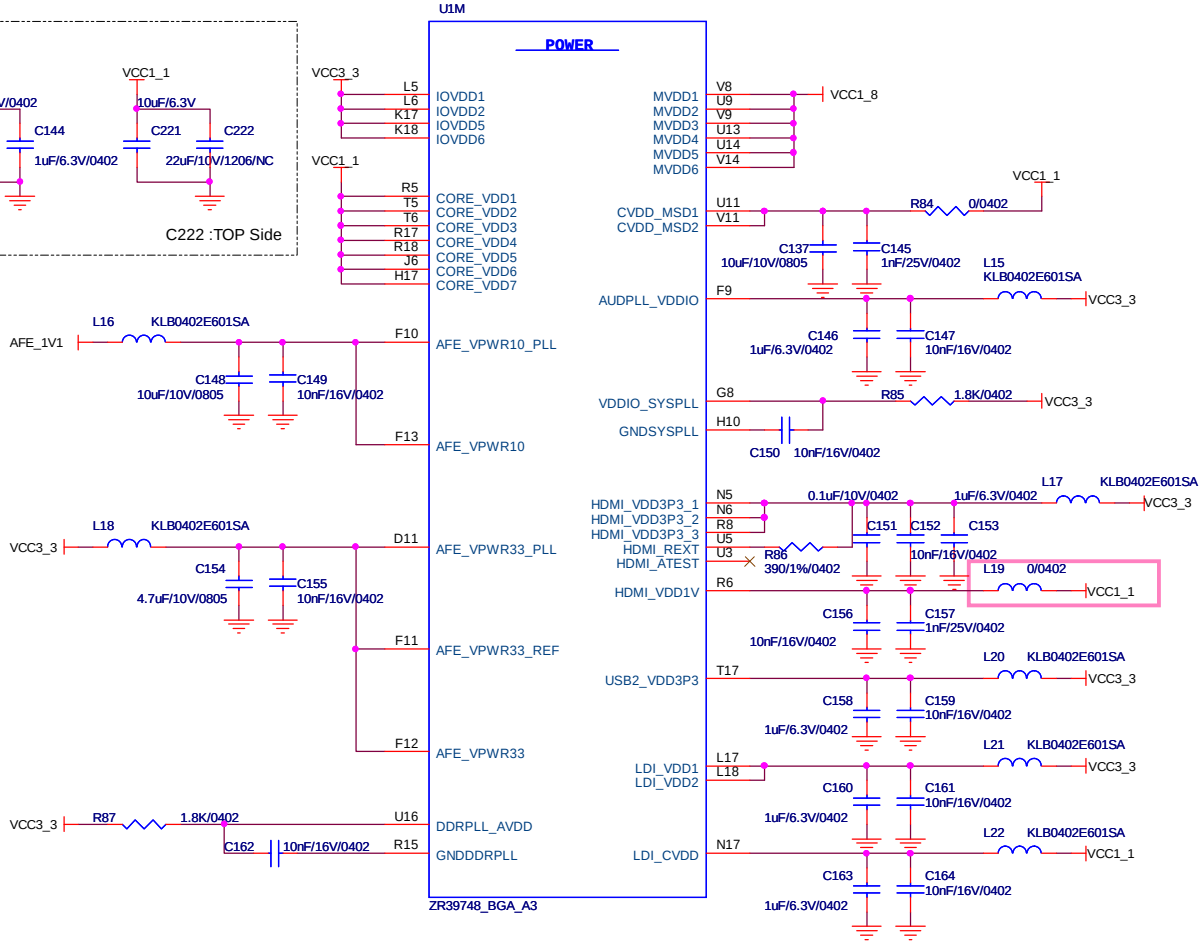
1.8V Bypass Capacitors

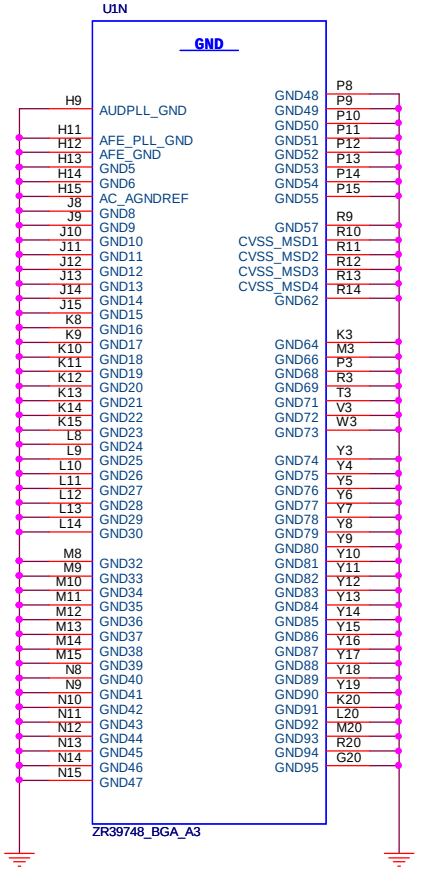


All small size capacitors must close to chip.

1.1V Bypass Capacitors







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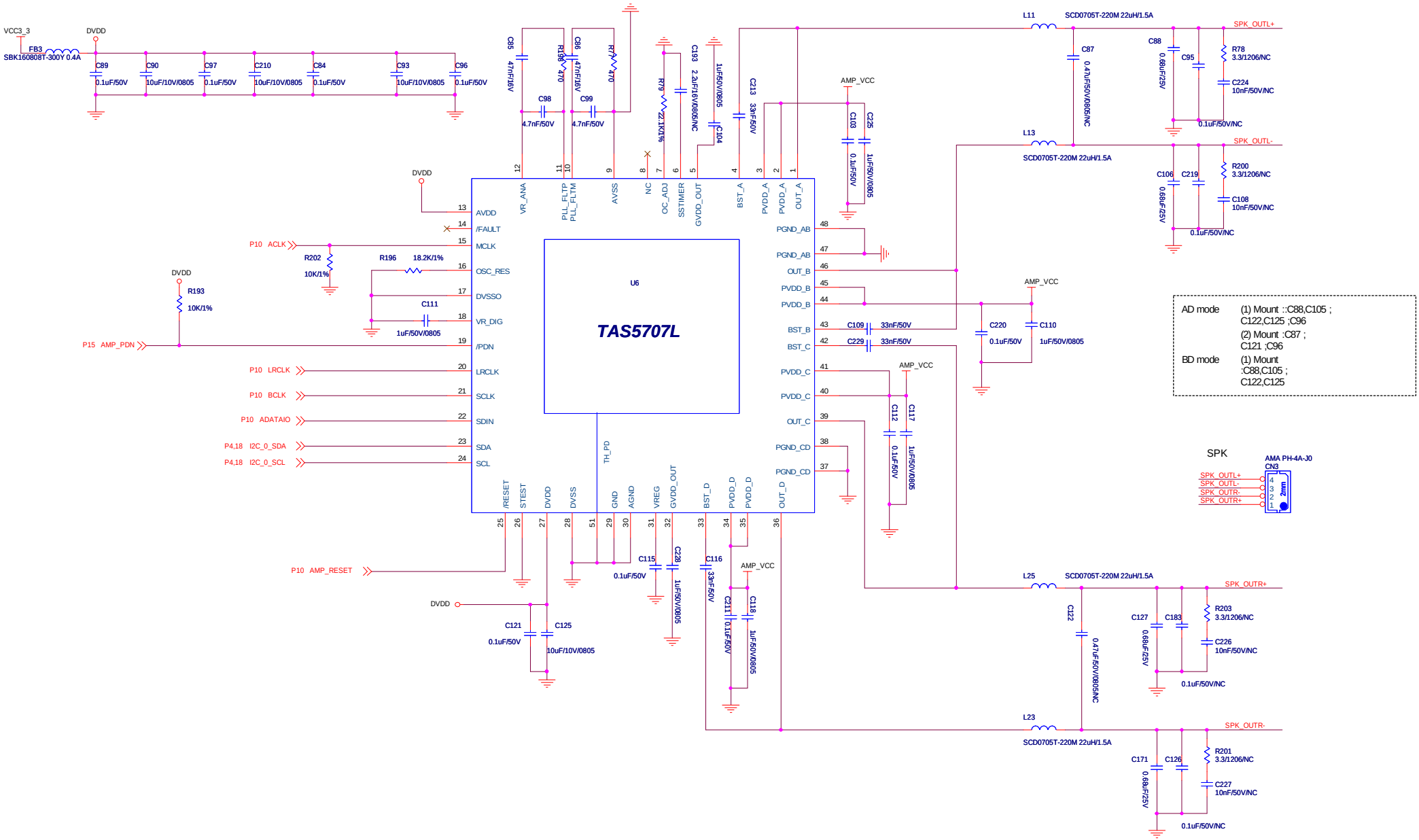

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U1J

LVDS & TCON I/F

LVDS

LVDS_D0O_N	L22	LVDS_D0O_N	LVDS_D0O_N P16
LVDS_D0O_P	L21	LVDS_D0O_P	LVDS_D0O_P P16
LVDS_D1O_N	M22	LVDS_D1O_N	LVDS_D1O_N P16
LVDS_D1O_P	M21	LVDS_D1O_P	LVDS_D1O_P P16
LVDS_D2O_N	N22	LVDS_D2O_N	LVDS_D2O_N P16
LVDS_D2O_P	N21	LVDS_D2O_P	LVDS_D2O_P P16
LVDS_D3O_N	P22	LVDS_D3O_N	LVDS_D3O_N P16
LVDS_D3O_P	P21	LVDS_D3O_P	LVDS_D3O_P P16
LVDS_CO_N	K22	LVDS_CO_N	LVDS_CO_N P16
LVDS_CO_P	K21	LVDS_CO_P	LVDS_CO_P P16
LVDS_D4O_N	R22	LVDS_D4O_N	LVDS_D4O_N P16
LVDS_D4O_P	R21	LVDS_D4O_P	LVDS_D4O_P P16
LVDS_D5O_N	P20	LVDS_D5O_N	
LVDS_D5O_P	N20	LVDS_D5O_P	
LVDS_D0E_N	E22	LVDS_D0E_N	LVDS_D0E_N P16
LVDS_D0E_P	E21	LVDS_D0E_P	LVDS_D0E_P P16
LVDS_D1E_N	F22	LVDS_D1E_N	LVDS_D1E_N P16
LVDS_D1E_P	F21	LVDS_D1E_P	LVDS_D1E_P P16
LVDS_CE_N	D22	LVDS_CE_N	LVDS_CE_N P16
LVDS_CE_P	D21	LVDS_CE_P	LVDS_CE_P P16
LVDS_D2E_N	G22	LVDS_D2E_N	LVDS_D2E_N P16
LVDS_D2E_P	G21	LVDS_D2E_P	LVDS_D2E_P P16
LVDS_D3E_N	H22	LVDS_D3E_N	LVDS_D3E_N P16
LVDS_D3E_P	H21	LVDS_D3E_P	LVDS_D3E_P P16
LVDS_D4E_N	J22	LVDS_D4E_N	LVDS_D4E_N P16
LVDS_D4E_P	J21	LVDS_D4E_P	LVDS_D4E_P P16
LVDS_D5E_N	J20	LVDS_D5E_N	
LVDS_D5E_P	H20	LVDS_D5E_P	

LVDS_REXT	N18	LVDS_REXT	R62 820/1%/0402
LVDS_ATEST	L15		
PWM/GPIO_S[16]	Y20	0	R224

TCON

STH1/SNDBUS[20]	U21		
RVS/SNDBUS[17]	W19		
TP/SNDBUS[19]/TAPSEL	V22		
STV1/GPIO_S[9]	T21	R453 0/0402	AMP_PDN → AMP_PDN P14
CPV1/SNDBUS[22]	V20		
OE1/GPIO_S[8]	T22	R463 0/0402	O/S_SET → O/S_SET P16
STH2/SNDBUS[21]	U22		
STV2/SNDBUS[24]	U20		
CPV2/SNDBUS[18]/TAPSEL_CAS	W20		
OE2/SNDBUS[23]/TRST	V21		
GPO/SNDBUS[13]	T20		

ZR39748_BGA_A3

LVDS_D5O_N — R60 100/1%/0402/NC — LVDS_D5O_P

LVDS_D5E_N — R61 100/1%/0402/NC — LVDS_D5E_P

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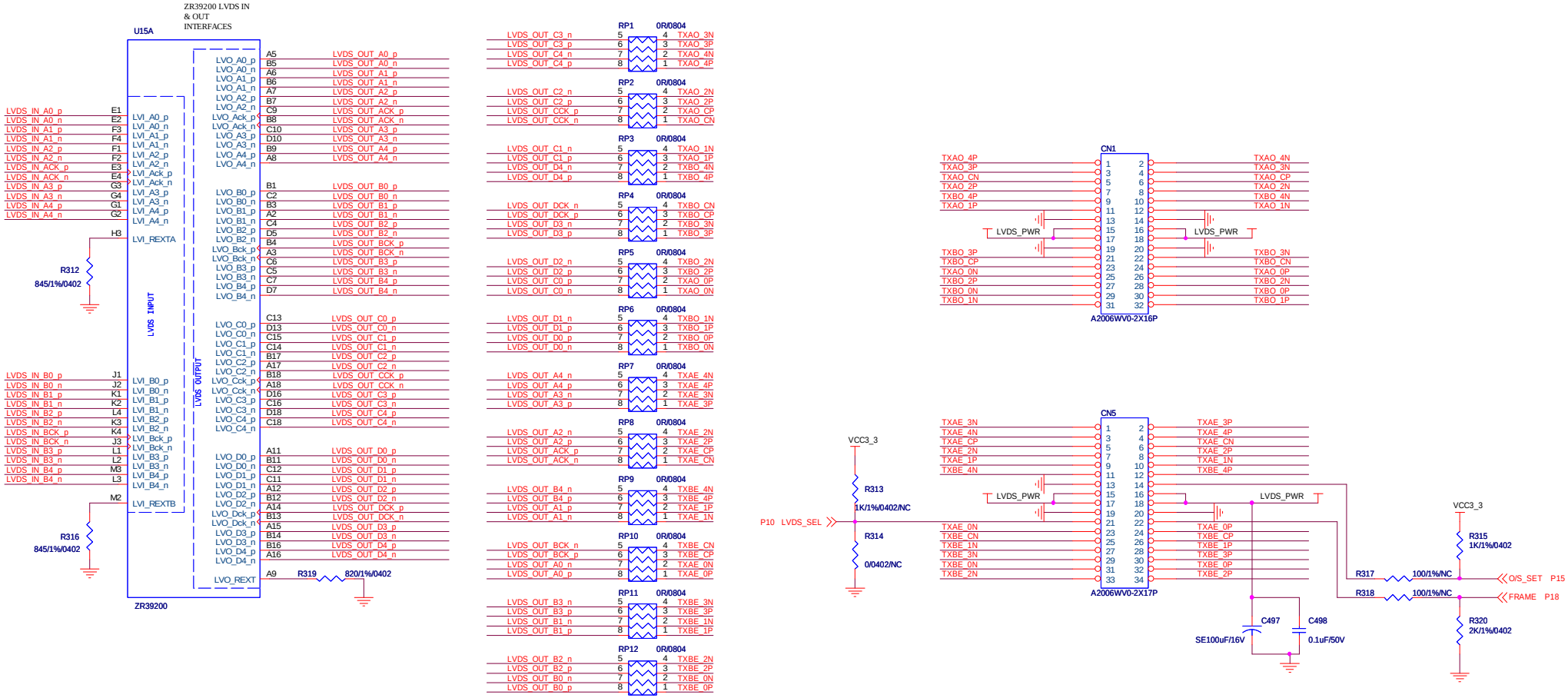
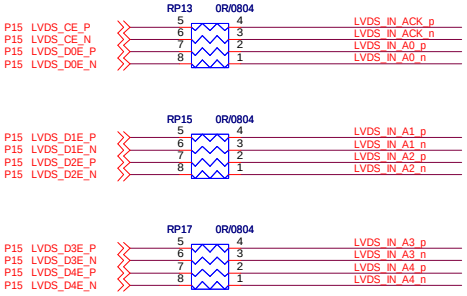
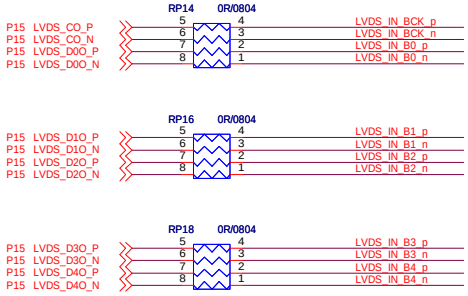


Please close these resistors to U15
LIW200



Please close these resistors to U15
LIW200



COMPAL OPTOELECTRONICS CO., LTD

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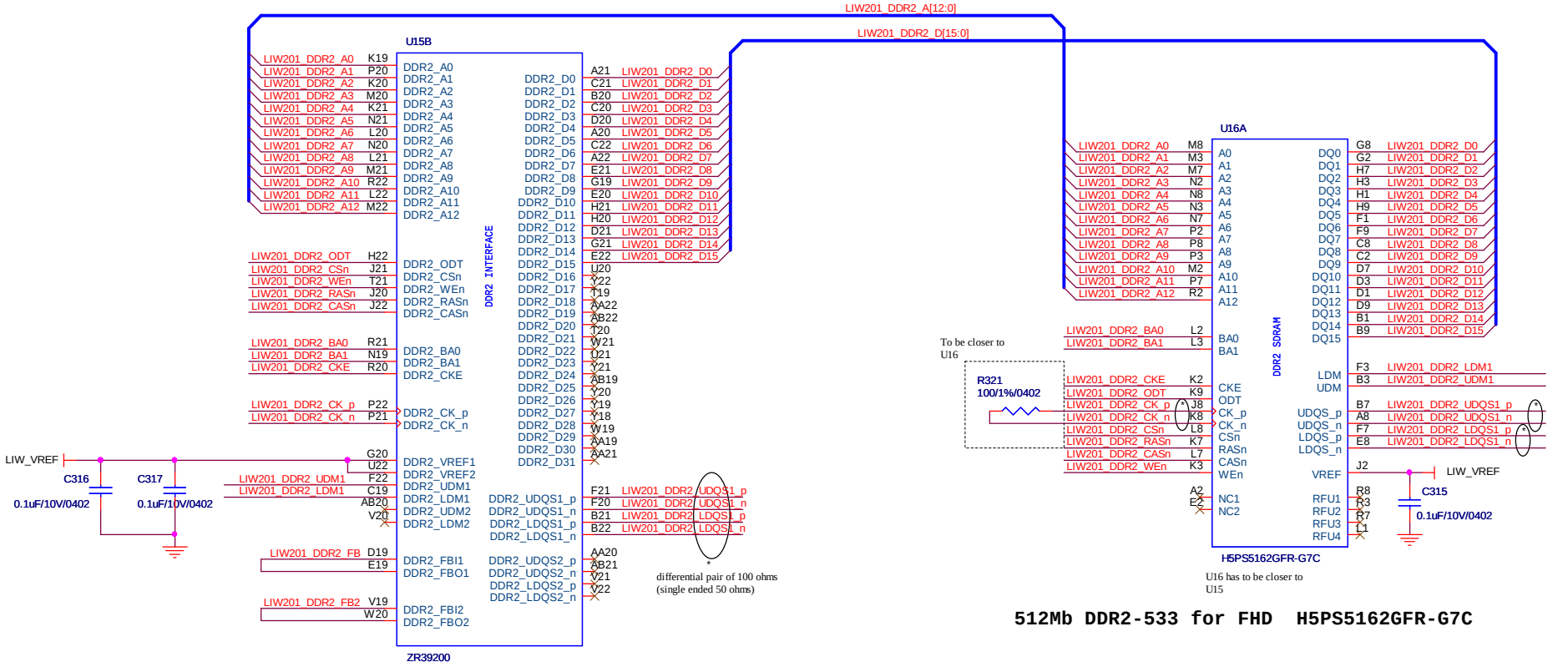

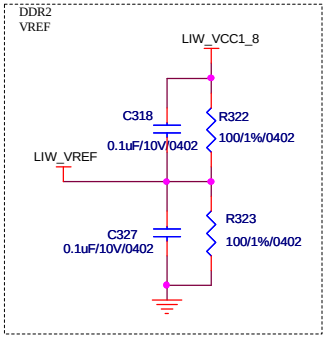

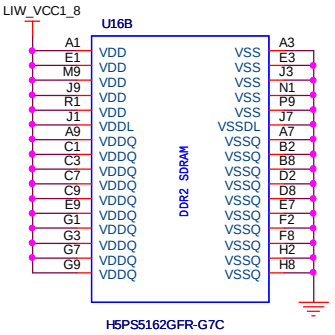

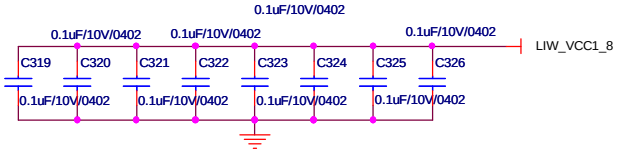

COMPAL OPTOELECTRONICS CO., LTD		
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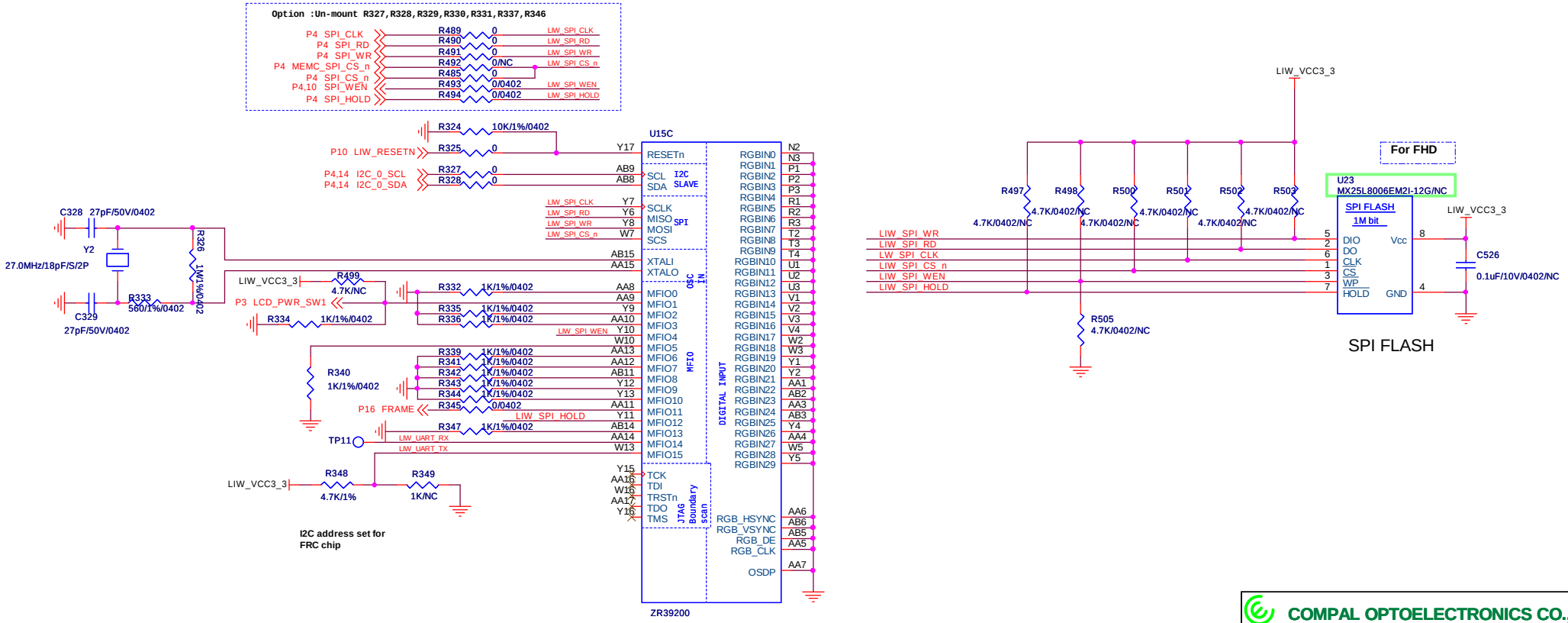

COMPAL OPTOELECTRONICS CO., LTD

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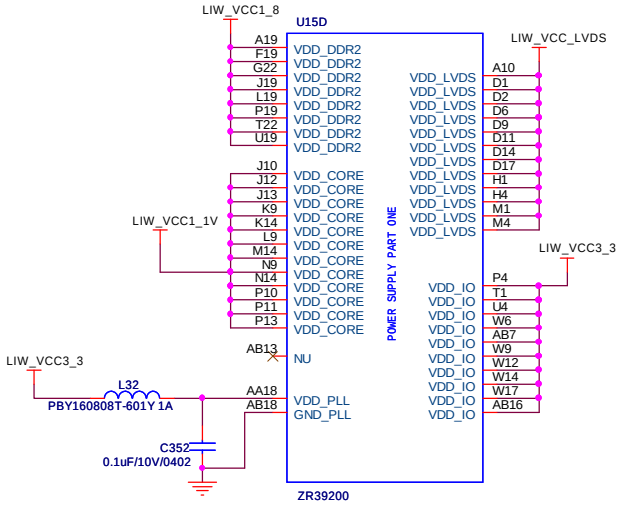

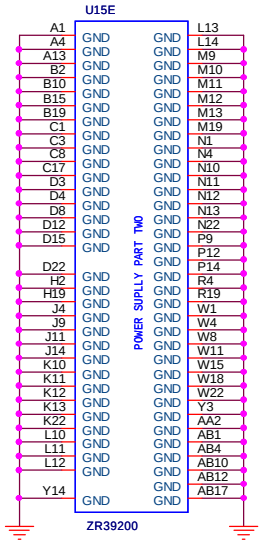

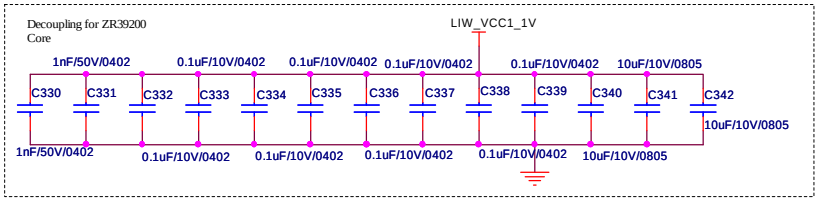

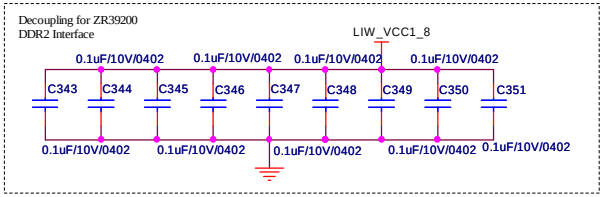

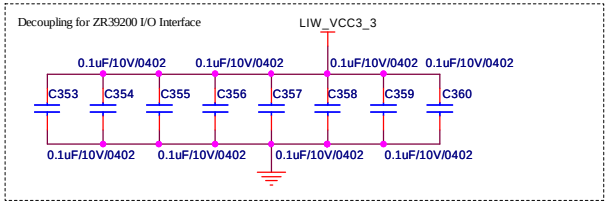

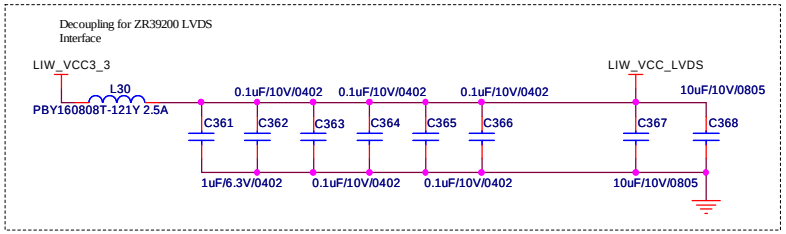

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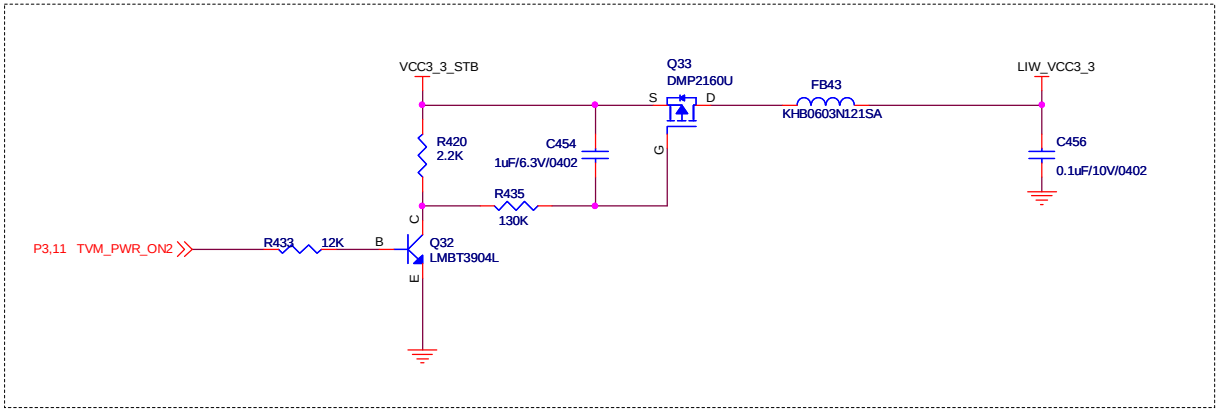
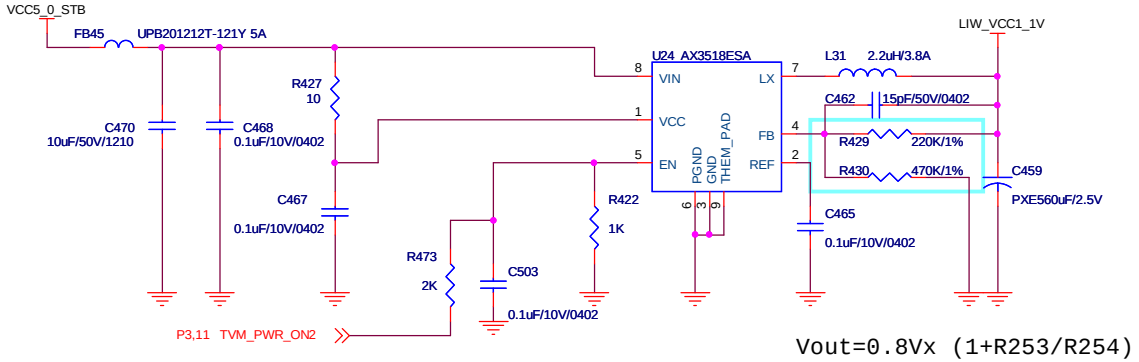
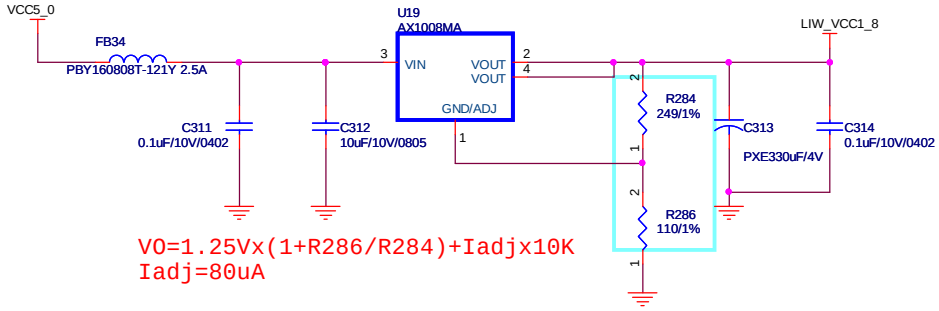


DC - DC FROM VCC TO 1.1V(2A)





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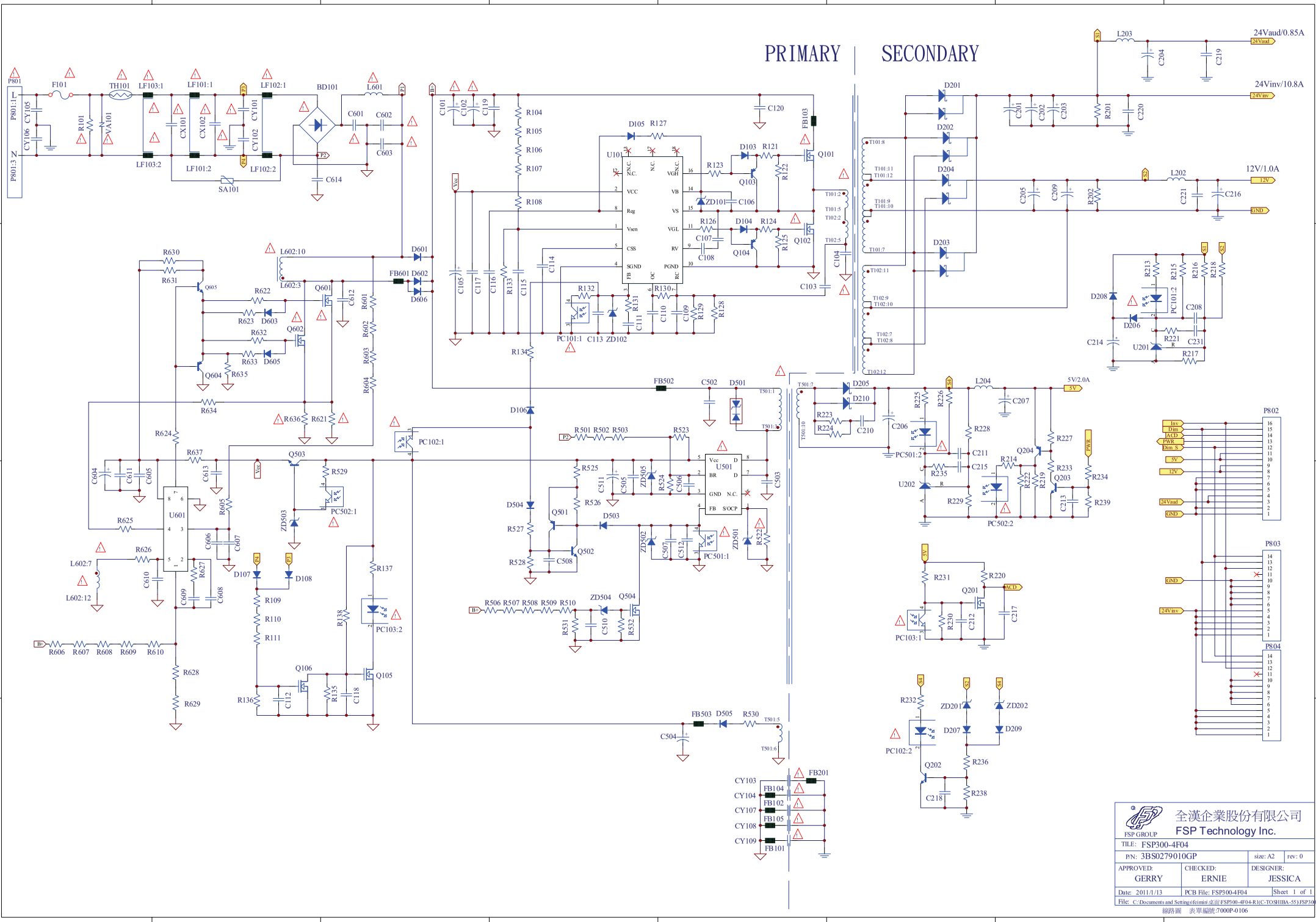
SCHEMATIC DIAGRAM

POWER-55"


PRIMARY
SECONDARY
24Vaud/0.85A
24Vinv/10.8A
12V/1.0A
5V/2.0A
FSP GROUP
全漢企業股份有限公司
FSP Technology Inc.
TILE: FSP300-4F04
P/N: 3BS0279010GP
size: A2
rev: 0
APPROVED: GERRY
CHECKED: ERNIE
DESIGNER: JESSICA
Date: 2011/1/13
PCB File: FSP300-4F04
Sheet 1 of 1
File: C:\Documents and Settings\feimin\桌面\FSP300-4F04-R1(C-TOSHIBA-55)\FSP300-4F04-R0-S.
線路圖 表單編號:7000P-0106

APPENDIX-A: Main assembly

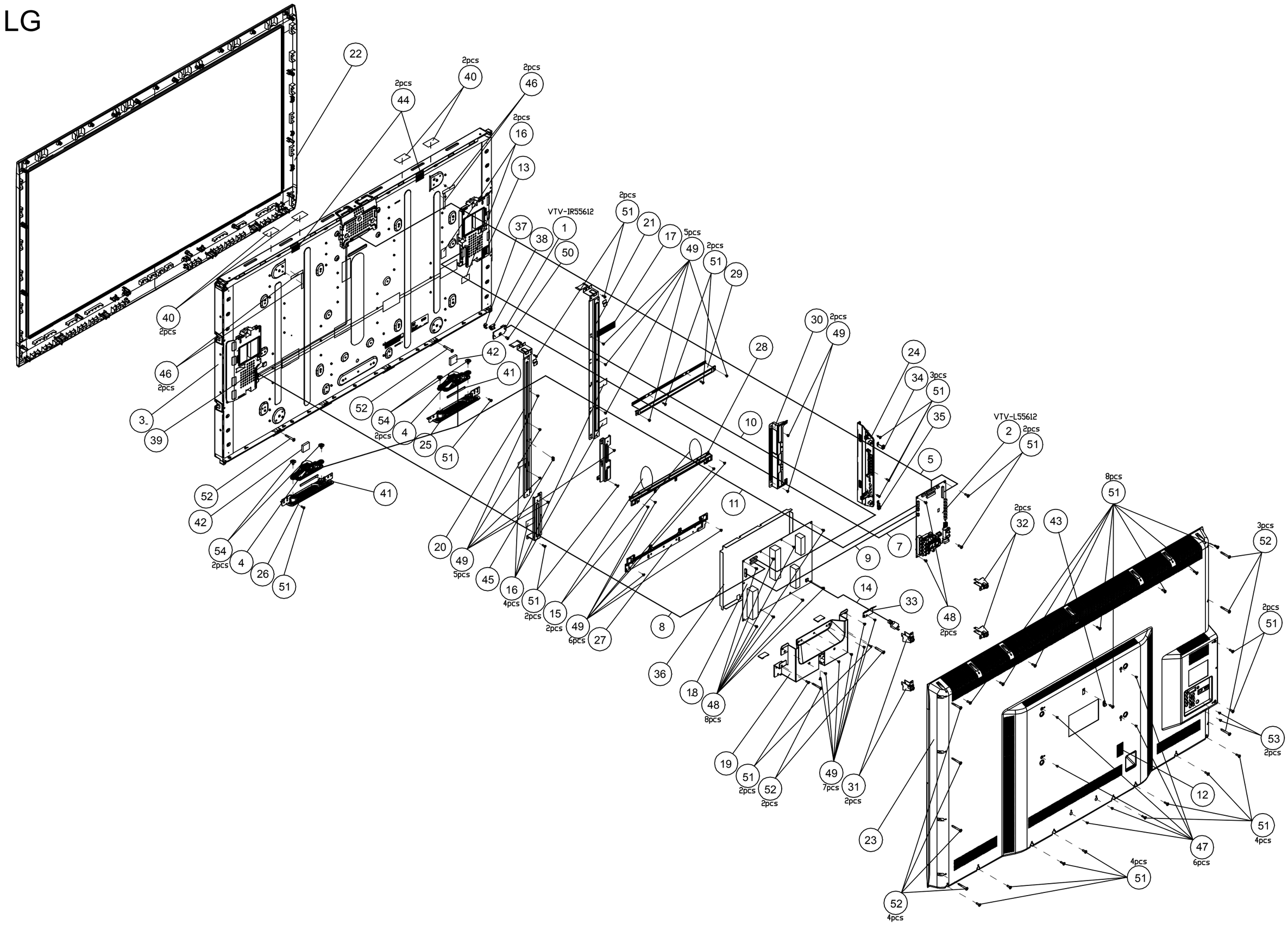
DP55441 Version:00

REF. No.	DESCRIPTION	PARTS No.	REMARK
		CHASSIS No. : SSE55TGA10I	
1	PCBA IR/B	CL454C3N69L01	
2	FIRMWARE M/B	CL461C5469L03	
3	LCD MODU	CLAC6VG5500R2	
4	SPK SET(PIN12d)	CLCG101016C0I	
5	H-CON SET	CLDC02L00430I	
6	H-CON SET	CLDC02L00440I	
7	H-CON SET	CLDC02P00760I	
8	H-CON SET	CLDC02P00780I	
9	H-CON SET	CLDC02P01670I	
10	H-CON SET	CLDC02V03760I	
11	H-CON SET	CLDC02V03770I	
12	PC870B+G4000/LBACK	CLELSD32T010I	
13	GASKET	CLFHTP404610I	
14	PWR CORD(S)(-0mm)	CLGA05001063I	
15	LOCKING CABLE TIE	CLKA000600ZZI	
16	MYLAR AL TAPE	CLLCTC324010I	
17	MYLAR AL TAPE	CLLCTC324020I	
18	PWR MODU(STJ55T)	CLPK101V2560I	
19	NECK BRKT ASM	CLAMSC55T050I	
20	PANEL BRKT (L) AS'Y	CLAMTD55T010I	
21	PANEL BRKT (R) AS'Y	CLAMTD55T020I	
22	BEZEL ASY GLOSSY DTV	CLAPSC550000I	
23	BACK COVER ASY	CLAPSC550010I	
24	KEY PLATE (DLNA) AS'	CLAPTD55T040I	
25	SPEAKER COVER AS'Y (	CLAPTD55T050I	
26	SPEAKER COVER AS'Y (	CLAPTD55T060I	
27	BOTTOM BRKT	CLECTD55T030I	
28	POWER PCB BRKT	CLECTD55T050I	
29	TOP BRKT	CLECTD55T060I	
30	MAIN PCB BRKT	CLECTD55T070I	
31	WALL MOUNT BRKT_L	CLECTD55T080I	
32	WALL MOUNT BRKT_R	CLECTD55T090I	

33	SR BRKT	CLECTD55T0A0I	
34	PCB SPRING_TOP	CLECTD55T0B0I	
35	PCB SPRING_BOTTOM	CLECTD55T0C0I	
36	POWER PCB MYLAR	CLELSC55T010I	
37	LED LENS	CLFCSC55T000I	
38	IR LENS	CLFCSC55T010I	
39	CR4305 FOAM	CLFHSE55T010I	
40	CR4305 FOAM	CLFHSE55T020I	
41	CD4305 FOAM	CLFHTD55T091I	
42	CR4305 FOAM+PD617	CLFHTO19D120I	
43	CABLE CLIP	CLLC05TC4010I	
44	ACETIC ACID TYPE	CLLCSE55T020I	
45	WIRE SADDLE	CLLCTA194700I	
46	ACETIC ACID TAPE	CLLCTD55T090I	
47	SCREW	CLMAA8000131I	
48	SCREW+LOCK WASHER(8)	CLMAA8002040I	
49	SCREW	CLMAAA002910I	
50	SCREW	CLMAB7000846I	
51	TAPPING SCREW	CLMABA000121I	
52	TAPPING SCREW	CLMABA000126I	
53	TAPPING SCREW	CLMABA000131I	
54	SCREW WASHER	CLMABA000330I	
55	Gasket BRKT (AUO)		
56	LOGO NP	CLEJ3SC55000I	
57	RATING NP-DP55441(LG	CLEJ4SE55010I	
58	HANDGRIP	CLFCTD550000I	
59	CARTON-SE55T	CLHB4SE55001I	
60	CARTON FOR TRAY-SE55	CLHB4SE55010I	
61	OWNERS MANUAL-SE55T	CLHDA69E5500I	
62	KEY LABEL	CLHGSC550010I	
63	SIDE I/O LABEL	CLHGSC550020I	
64	I/O LABEL-SE55T	CLHGSE550000I	
65	ENERGY LABEL-SE55T	CLHGSE550010I	
66	UPC CODE-SE55T	CLHISE55T000I	
67	ZIPPERED BAG	CLHK3OL77801I	
68	PE BAG (STAND)	CLHK3SC55011I	

69	PE BAG-SE55T	CLHK3SE55000I	
70	SCREW+2WASHER(AWL)	CLMAA2000831I	
71	REMO CTRL AAA	CLPK11V01700I	
72	STAND ASY	CLAPSC550021I	
73	EPS FORM(TOP LIFT)	CLFJSC55T010I	
74	EPS FORM(TOP RIGHT)	CLFJSC55T020I	
75	EPS FORM(BOTTOM LIFT	CLFJSC55T030I	
76	EPS FORM(BOTTOM RIGH	CLFJSC55T040I	
77	EPS FORM(TOP MIDDLE)	CLFJSC55T050I	

LG


22
2pcs
40
2pcs
46
2pcs
44
2pcs
16
13
VTV-IR55612
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37
38
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51
21
17
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2pcs
51
29
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2pcs
49
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3pcs
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35
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VTV-L55612
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2pcs
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3pcs
52
2pcs
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45
16
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51
2pcs
15
2pcs
49
6pcs
27
8
36
18
48
8pcs
11
9
7
14
33
48
2pcs
19
51
2pcs
52
2pcs
49
7pcs
31
2pcs

INSTALLATION

POSITIONING THE LCD HDTV

Always use a firm-flat surface when positioning your HDTV. Do not position the unit in a confined area. Allow adequate space for proper ventilation.

CAUTION INSTALLING STAND

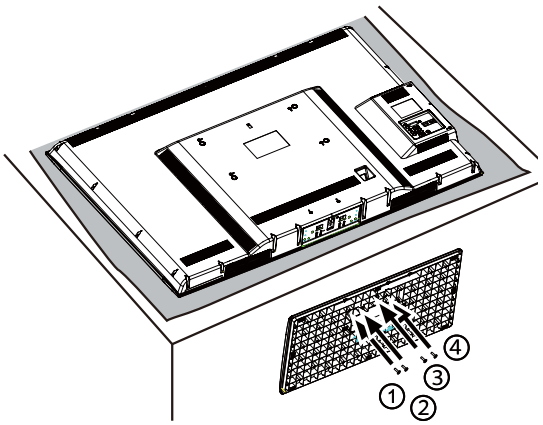
- Handling by two people is recommended when installing.
- When holding (moving or lifting) the LCD Display, hold the display's body. Do not handle the LCD TV by holding the attached accessory parts (speakers), otherwise it may result in damage
- Before installing, provide a desk (or a part of it) which is strong enough to support the weight of the LCD TV and its stand. The desk must be larger than the LCD Display's screen size. The desk's surface must be flat and covered with soft material (such as a blanket) for protecting the screen surface.
- Before putting the LCD Display on the desk, make sure there is no object on it. Leaving any object under the screen may cause damage on the screen.
- The LCD TV with this stand should be installed on a flat and level place. Do not place it on non flat, unlevel or unstable cart or stand. The display may fall, causing not only serious damage to the products but serious injury to a person.

For correct installing, mounting and uninstalling of the LCD TV Stand, it is strongly recommended to use a trained, authorized dealer. Failure to follow correct procedures could result in damage to the equipment or injury to the installer.

Installing Stand

1 Place the LCD TV on a flat surface place where maintained with soft materials (such as a blanket) for protecting the display screen.

2 Secure the stand to the TV with 4 screws.

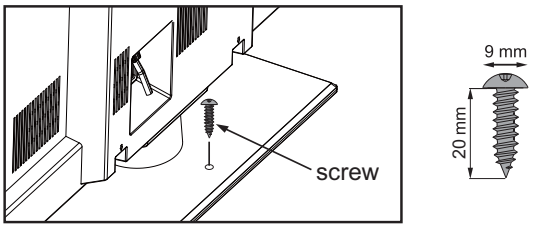


Warning

To prevent injury, this apparatus must be securely attached to the floor / wall in accordance with the instalation instructions.

This TV could fall over if it is pushed , pulled or knocked down. Use the screw to secure TV to the furniture

Screw type:



Uninstalling Stand

1 Place the LCD TV screen facing down on a flat surface with soft materials (such as a blanket) for protecting the display screen.

2 Remove screws in 4 holes with screw driver.